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FRED W. VOGEL, Editor
(On leave of absence in the U. S. Armed Forces)

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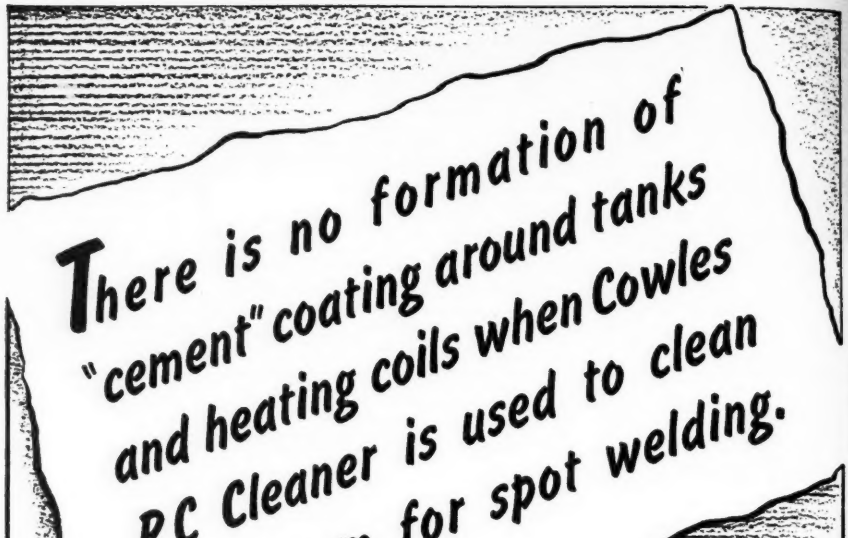
More Than 16,000 Circulation This Issue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METALS vs. PLASTICS

ACCORDING to the Mellon Institute, over an eighth of a million tons of plastics were produced in this country in 1941. How many tons were produced in 1942 may not even be announced: this information may be suppressed as of military importance. But it requires little imagination to conclude that the number is large.

We have seen plastics take the place of metals by the carload. We have come to a partial realization now of what even the lowly Chinese soybean can do. We know that a technical committee has been appointed to set up federal specifications for plastics. It is only proper that we should ask ourselves whether plastics are apt to replace metals entirely, leaving those of us in the metal finishing business out on a limb.

I feel quite certain that such a sour condition will never be. An impartial survey of the world's industries leads one to the conclusion that there are places where metals are just as superior to plastics as plastics may, in other places, be superior to metals.

Electrical and thermal conductivity so far are on the side of the metals, as are ductility, malleability, elasticiy, density, solubility and resistance to abrasion and heat. The ability to become magnetized is apparently confined to metallic substances. So also are the benefits to be derived from such operations as tempering and heat treating.

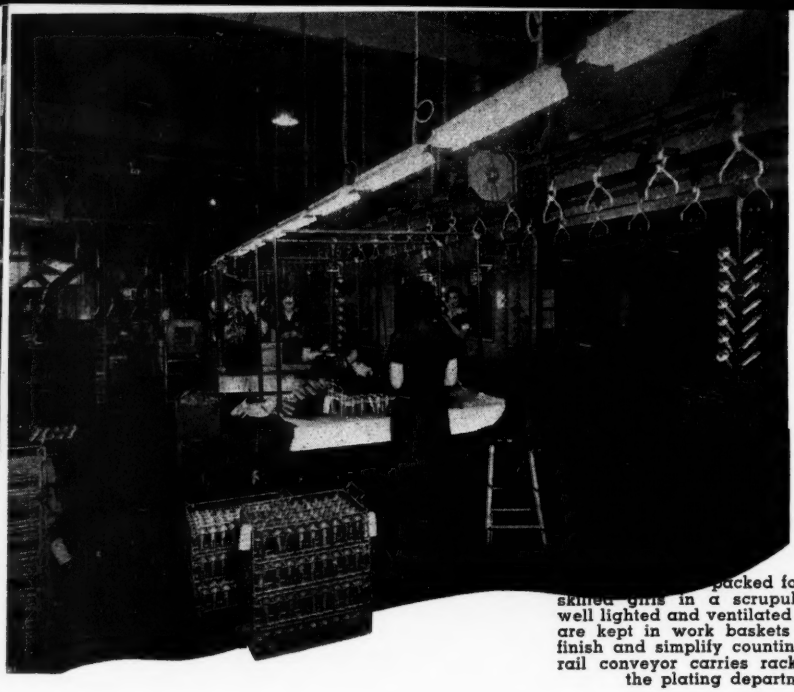
On the side of plastics we have resistance to corrosion, high strength combined with light weight, the ability to be transparent or highly colored, electrical and thermal resistance and relative cheapness.

It would appear from these brief considerations alone that plastics and metals both have well-defined places in our contemporary civilization. It is apparently as foolish, for example, to attempt the manufacture of locomotive boilers, steam engines, razor blades or compass needles out of plastics as it is unnecessary to employ metals in the fabrication of automobile steering wheels, toothbrushes or cigarette cases. I say "unnecessary" advisedly, for there is one other criterion besides basic utility which will always be a factor in tipping the scales in favor of metal or plastic. This criterion is design.

Design consists of appeal to the senses, particularly to the eye. Wherever the prospective user is more likely to be influenced by beauty and excellence of craftsmanship alone, regardless of other considerations, metal and plastic are on a par. Each has an equal chance.

I think it was Clarence Buddington Kelland who first observed publicly in an utterance of his immortal character, Marcus Aurelius Fortunatus Tidd, that competition is the life of trade. In a field in which design alone is the ultimate criterion of metal vs. plastic, as is undoubtedly the case with thousands of articles in the upper gadget class, it is obvious on the face of it that if we who are interested in metals are forced under by our new competitors, the plastics engineers, it will be only because we are poorer craftsmen and less competent artists and designers than our rivals. If we fail here, we shall deserve to fail.

Bryant W. Pocock



packed for plating by skilled girls in a scrupulously clean well lighted and ventilated room. Parts are kept in work baskets to preserve finish and simplify counting. A monorail conveyor carries racked parts to the plating department.

Portable Rectifiers Aid Modern Production Plating

By BARTLETT WEST

FOR an excellent example of the exclusive use of rectifiers in electroplating consider the N. A. Woodworth Company, of Ferndale, Mich.

The Woodworth Company, one of the most interesting war production plants in the United States, manufactures more than 100 aircraft engine parts for the Wright Aeronautical Corporation. Approximately 55 of the parts Woodworth produces have to be electroplated during at least one stage of their manufacture and for this highly important work the company, under direction of Gerald Burgess, Woodworth plating engineer, has installed a strictly modern, "production line" type of plating de-

partment.

One of the more interesting features of the Woodworth plating department is the fact that the department relies upon 13 Udylite Malory Rectoplaters, five of which were installed in May, 1941. These units are gained in using rectifiers for direct current, of course, are compactness and flexibility. Being compact and easily transportable from one spot to another, the rectifier can be placed directly alongside the plating unit, or, as is done in the Woodworth plant,

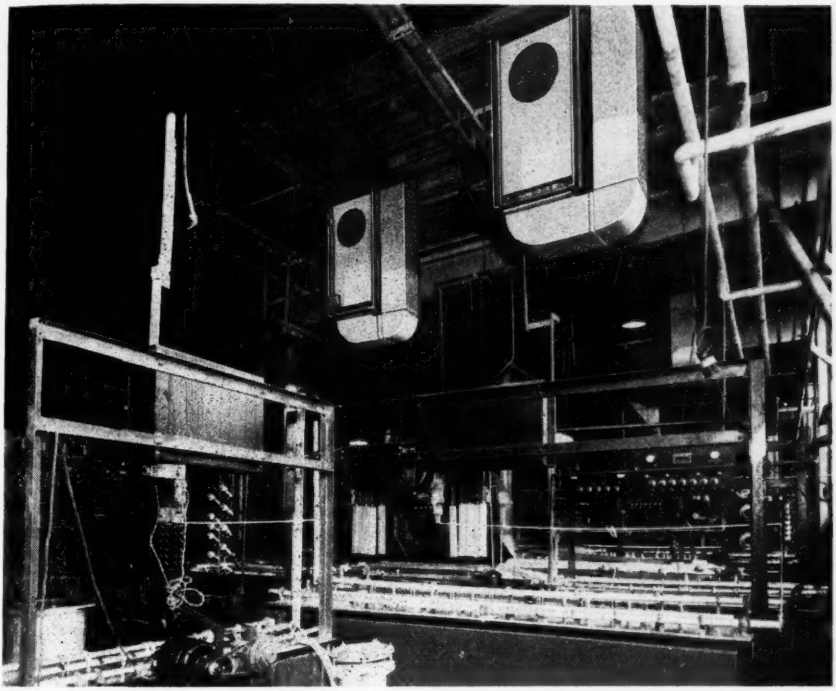
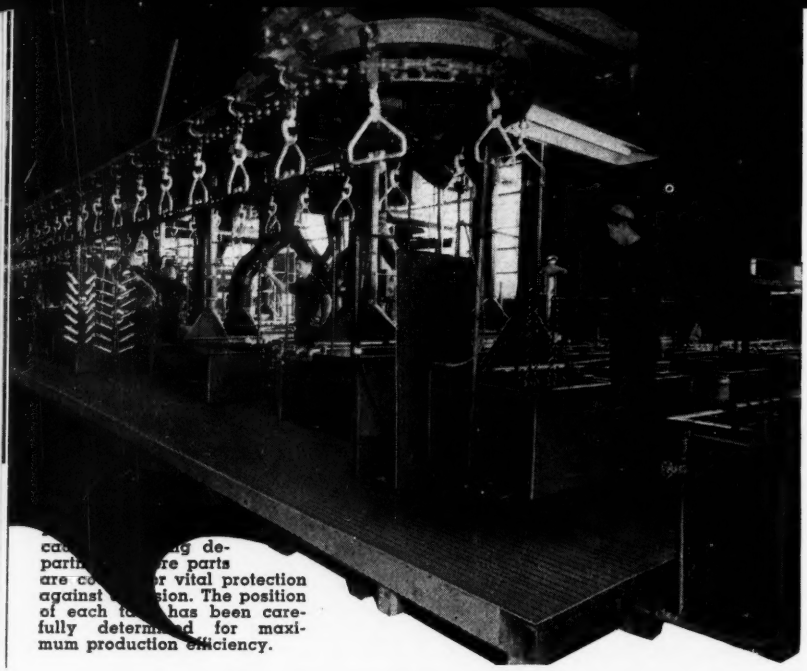


Fig. 2—Another view of the N. A. Woodworth cadmium plating line. Note that the Udylite Rectoplaters, which provide current for plating, are suspended from the ceiling to conserve space.

suspended from the ceiling as shown in one of the accompanying illustrations and ventilated with fresh air sucked in from outside the building. Although some of these Rectoplaters were installed 16 months ago and have been in constant service since, production has never been stopped due to their failure, according to Burgess.

Among the primary advantages suspended directly overhead. One of the economies offered by the rectifier is the saving in electric conduit and another perhaps more important one, is that the rectifier consumes no power when not in use. The rectifier also offers independent voltage and current control.

By suspending the Udylite rectifiers overhead, Burgess has attained the maximum of efficiency in the utiliza-



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of each to... ...has been care-
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mum production efficiency.

tion of space within the plating room. He also has gained a maximum of current capacity from the Rectoplaters by keeping them adequately ventilated, thus relatively free from the dangers of heat and corrosion.

The Udylite Rectoplaters, each of which delivers 1,440 amperes at six volts, are ventilated by clean air sucked through ducts extending through the roof. Two 18-inch fans are employed for suction and the air thus forced in is sufficient to ventilate the entire plating room.

Other equipment in the Woodworth plating room, which, incidentally, is being added to as production requirements demand, includes two cadmium plating units, two cadmium plating barrels, one copper plating unit, one tin plating unit, one chromium plating unit and the normal assortment of rinsing and pickling paraphernalia. A standard plating procedure is used. That is, the work is degreased with a solvent degreaser or an alkali, after which it is anodicly electro-cleaned, rinsed in cold water, acid dipped, rinsed again and electro-plated. Confusion and crowdedness are eliminated by the fact that a conveyor is employed to feed the plating units from one racking place.

Still another piece of Woodworth equipment that deserves special mention is the copper stripping unit which is the first commercial installation of a newly developed process introduced by the Udylite Corporation, of Detroit. This process is said to strip copper in approximately one-half the time required by the more commonly used chromic acid method. Udylite engineers are engaged in research work which, it is hoped, will lead to a method under which stripped copper can be economically salvaged.

Many of the parts plated by Woodworth are ground to extremely close tolerances prior to plating. They must, therefore, be still-plated individually so as to avoid danger of dimensional damage. Some of the parts, on the other hand, are subjected to more than a dozen grinding operations after plating. A good example

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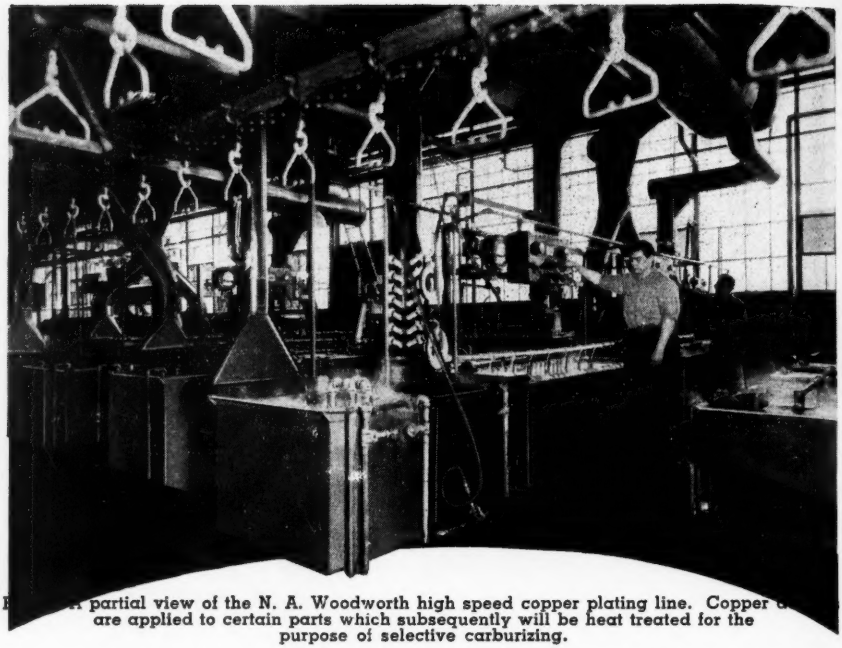

A partial view of the N. A. Woodworth high speed copper plating line. Copper [illegible] are applied to certain parts which subsequently will be heat treated for the purpose of selective carburizing.

of post-plating machining is a propeller hub flange which is plated to between one and three ten-thousandths of an inch, after which it must undergo 18 separate grinding operations.

Burgess, incidentally, believes in coordinating machining with plating, since, he argues, good plating cannot follow poor machining. As a case in point he cites some difficulty encountered while heat-treating copper-coated parts. During the heat treatment, it was noticed, carbon succeeded in penetrating the protective copper coating and caused localized hardening of the base metal. At the outset this was believed to be due to the extreme thinness of the copper coating, so a considerably thicker coat was applied.

The penetration and resultant localized hardening continued, although to a lesser extent. Woodworth engineers then undertook a series of tests which proved beyond doubt that the thickness of the protective coating required on a given part bears a direct relationship to the surface finish of the base metal to which the copper is applied. In other words, a smoothly machined surface can be successfully protected against case hardening with as little as one-ten thousandth of an inch copper plating whereas a rougher work surface requires a correspondingly thicker protective coating.

The Woodworth Company, which during the past two years, has grown from a small shop employing 25 persons to a huge and strictly modern plant employing several thousand men and women, has maintained its own plating and heat treating departments from its inception. The plating department, alone, employs 65 men.

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Enamel-Drying System with Radiotron Control

By JOHN E. HUBEL

RADIOTRON tubes play an important part in the control of enamel-drying equipment (Dry-Sys) in use at the lamp-making plant of Moe Brothers, Fort Atkinson, Wisconsin. The tubes are types D, M, T and R, and the controls are designed for 117 volt, 60 cycle alternating current, the consumption not exceeding 10 amps.

Enamel is sprayed on lamp parts and the drying is done in a gas-fired oven. A continuous line of lamp parts passes through the drying ovens and comes out ready to be handled or assembled. The safety control, using the Radiotrons, has been developed as an efficient safeguard against fire and explosion hazard, the control forming a remote and complete operating station for all of the ventilating and heating equipment in the plant regardless of the number of burners.

In the event that the flame at any burner becomes extinguished, the sensitive device causes the control to immediately cut off the fuel supply to all of the burners. This multiplicity of control is accomplished through a single control station. At Moe Brothers' plant, the safety control is not merely thought of as an instrument but is the heart of a complete system of safety operation. It func-

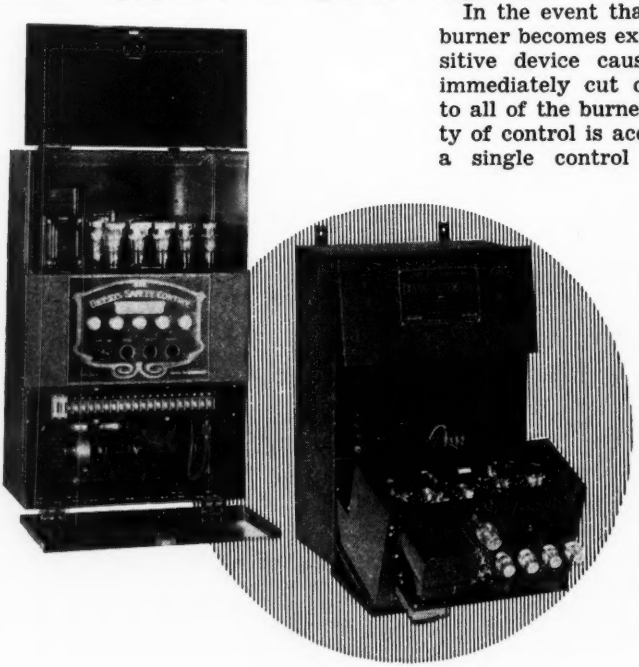
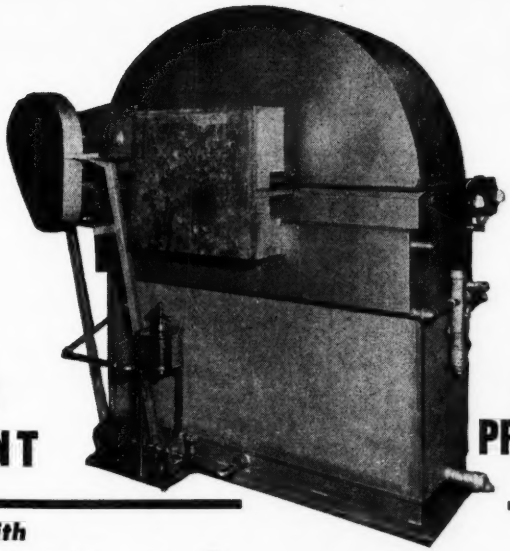


Fig. 1—View of Dry-Sys safety control box showing complete assembly at the left and the operating mechanism removed at the right.



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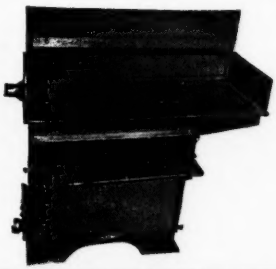

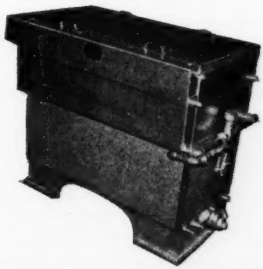

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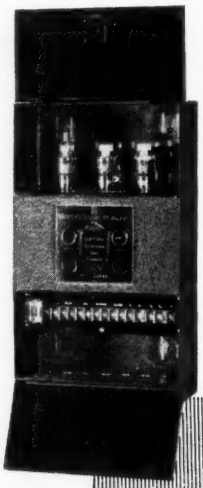
tions as an operating and supervising control of externally located safety devices and electrical apparatus for the control of the equipment being operated, such as: magnetic motor starters with interlocks for operating all of the supply and exhaust fan and blower motors from a single control at the cabinet.



Dry-Sys control equipment consists primarily of air flow switches for automatically insuring adequate ventilation at all times; pressure switches for automatic supervision of proper fuel pressures, thermal switches for protection against excessive heater delivery temperatures, spark ignition for the electrical igniting of pilot burners, flame rod assemblies for the instantaneous detection of flame failure and electrically operated valves in the fuel lines, which close immediately should there be failure at any part of the entire system. An externally operated alarm system is provided as a notifier in the event that any part of the system should stop.

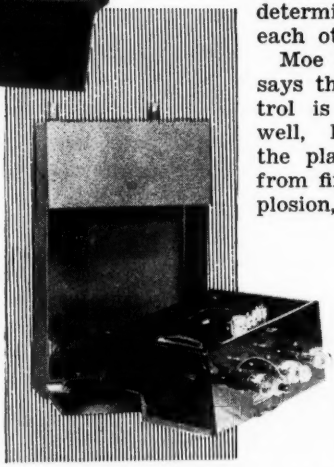


Fig. 2—View of Dry-Sys flame detector control box showing complete assembly above and the operating mechanism removed below.

Within the safety control cabinet is an integrally built electronic time delay for the purpose of automatically preventing any ignition taking place until the ventilating system has been completely started and operated for a predetermined length of time, usually, at the Moe plant, amounting to five or ten minutes. This, according to the plant engineer, is for the express purpose of thoroughly purging the entire ventilating system and the space being ventilated of any accumulated fumes from work or from fuel leakage prior to the introduction of any heat.

As can be seen, all operations and equipment that are to be safety controlled are automatically operated while the remaining operations requiring no special attention from a safety standpoint are purposely left to manual control. A definite sequence of starting is required by an operator, since the pressing of push buttons in proper rotation produces no results and insures that all equipment be started in a predetermined relation to each other.

Moe Brothers' engineer says that the safety control is doing its work well, having protected the plant and employees from fire hazards and explosion, and permitted the enameling and drying processes in the plant to continue with the least amount of delay during the time the equipment has been in use.

Such safety control should net good returns on the cost of installation.

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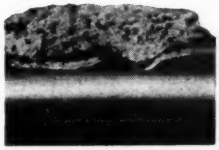

KOILKOTE SAVES COIL. Heavy deposits such as are illustrated here must be removed with a sledge hammer with the obvious possibility of damaging the coils. With Koilkote, lighter deposits and ease of removal eliminate this cause of damage.

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Modern Gold Plating — Part 28

By JOSEPH B. KUSHNER, CH. E.
Metal Finishing Consultant
New York City

WITH the paper on electropolishing of gold in the November, 1942, issue, we have just about completed the series of articles on Modern Gold Plating it was our privilege and pleasure to present in PRODUCTS FINISHING. We hope they have been of interest and value to the many people who took the time to read them. Before signing off on the subject of gold plating, however, we would like to summarize a few of the highpoints of the series. We are also giving a chapter by chapter index of the series for the convenience of those readers who have saved the articles and wish a handy method for referring to a given topic in gold plating.

Gold Plating Tips

1. In general, for reasons of efficiency, neatness and health, it is best to use a prepared gold salt, either in solid or liquid form, from a reliable supplier, in preference to cutting down your own gold, to prepare a gold plating solution.

2. Purchase your gold salt by weight of gold content only and check on whether it is being sold by the avoirdupois or troy weight system.

3. If you must cut your own gold down, the electrolytic method of doing it is probably the cleanest and the best.

4. Gold immersion plating baths will give proper results only on copper or copper alloy basis metals; a deposit of copper or brass is required on all other metals.

5. Internal cell or salt water gilding is useful for producing uniformly colored, light gold deposits.

6. In operating a regular gold plating solution, use sufficient gold in the solution to establish a "reservoir of metal power." The man who uses a "shoe string" amount of metal in his gold plating bath will get "shoe string" results and in the long run the bath will cost more to operate.

7. The secret of maintaining a uniformly colored gold deposit and a long bath life is to keep **all** factors constant. Thus, to illustrate with one factor, current density: The conductivity of a gold plating bath increases with age. This means a constant voltage across the bath will produce higher and higher current densities, all other things being equal, as time goes on, causing a change in the color of the deposit. This points the moral that a voltmeter by itself across the

D.C. source isn't much help when it comes to color control.

8. To increase gold plating bath life and reduce expenditures for costly adjunct chemicals, keep the plating bath temperature down as low as is compatible with good results and avoid contamination. To really avoid contamination, make the plating bath up with distilled water, replenish it with distilled water and use a distilled water decontamination dip prior to entering the plating bath.

9. To conserve metal and salts, at least one recovery rinse should be used immediately after the gold plating bath, and the water in the recovery rinse should be changed as often as possible.

10. If small parts or pieces are to receive a medium or heavy gold deposit, gold barrel plating is probably the most efficient way for handling them.

11. Gold inventory can and should be governed in the plating plant by the use of proper controls and records.

12. If you are going to build a new gold plating plant or rebuild an old one, it pays to plan it from the ground up!

Contents Index of Modern Gold Plating

Part 1—(September, 1940)—Commercial gold plating salts. Weight conversion. How to dissolve gold chemically and electrochemically.

Part 2—(October, 1940)—Gold plating by displacement (immersion plating). Theory, formulas. Gold plating by use of an internal cell (salt water gilding). Theory, formulas.

Part 3—(November, 1940)—Gold electroplating. Plating with pure gold. Formulas that can be used. Importance of adequate gold content.

Part 4—(December, 1940)—Factors that influence the color and structure of gold deposits. Color sensitivity of the human eye. Physical factors and chemical factors. Current density. Agitation. Temperature. Rackings. Basis metal. Gold content. Free cyanide. Carbonates and other salts. Addition agents. PH. Contaminants and their influence.

Part 5—(January, 1941)—Difference between rolled gold, gold filled and gold electroplate. Binary gold alloy color chart. Alloy gold plating. Formulas that can be used. White gold. Green golds. Pink golds. Pale yellow golds. Lilac colored golds. Heavy deposition of gold alloys.

Part 6—(February, 1941)—Description and discussion of the Bek gold plating process. Theory and plant operation.

Part 7—(March, 1941)—Age hardening of gold electrodeposits. Barrel plating with gold. Cost of barrel plating with gold. Color and deposit distribution. Barrel design.

Part 8—(April, 1941)—Dragout in gold plating. Theory. Use of one and two tanks for recovery rinses. Formulas and calculations.

Part 9—(May, 1941)—Automatic gold plating. Plating on small items as a continuous operation. Description of automatic gold plating of razors. Estimation of proper size of gold plating tanks. Determination of dragout in automatic gold plating.

Part 10—(June, 1941)—Gold encasing. Types of plating bath to use. High current density plating bath (formula). Maintaining plating bath carat. Calculation of the amount of gold to be plated out. Correct formula to use and computation of plating charts for the purpose.

Part 11—(July, 1941)—Gold control.

Chemical and physical testing methods. Method for analysis of gold in solution. Determination of gold in solid form. Obtaining the carat of a gold electrodeposit.

Part 12—(August, 1941)—Gold control. Handling and bookkeeping methods in the plating plant. Gold stock record. Gold removal record. Gold control at the tanks. Gold plated on the work. Gold plating charts and efficiency. Gold plated on wires and racks. Gold lost through dragout. Tank gold record.

Part 13 — (September, 1941) — Description of a modern costume jewelry plating plant. Planning the gold plating plant. Conserving, time, energy, matter and space.

Part 14—(October, 1941)—Plating of gold on plastics and non-conductors. Methods.

Part 15—(November, 1941)—Conservation of cyanide in gold plating. Methods. Testing doubtful cyanide.

Part 16 — (December, 1941) — Non-cyanide gold plating baths. The acid chloride bath. Other halide solutions. Sulfamic acid bath. Gold sulphide bath. Bright plating bath. Gold thiosulphate bath. Thiocyanate bath. Phosphate bath Ferrocyanide baths. Plating gold from liquid ammonia.

Part 17 — (January, 1942) — Testing the porosity of gold deposits. Porosity of gold deposits on iron and steel. Porosity of gold deposits on copper and copper base metals. Porosity of gold plated on nickel. Stripping gold deposits. Stripping gold from copper and copper base metals. Stripping gold from brass. Stripping gold from nickel. Stripping gold from iron and steel. Stripping gold from silver.

Part 18—(February, 1942)—Recovery of gold from plating solutions. Effect of heat. Precipitation by chemical action. Zinc precipitation method. Electrolytic precipitation.

Part 19—(March, 1942)—Gold plating of stainless steels. Methods.

Part 20—(April, 1942)—Manufacture of gold leaf manually and by electroplating.

Part 21—(May, 1942)—Manufacture of gold thread by electroplating. Manufacture of gold plated buttons for the armed forces.

Part 22—(June, 1942)—Comparison of racks and wires in gold plating. Advantages in favor of racks.

Part 23 — (July, 1942) — Effect of water in gold plating. Content of various waters. Effect of various ions.

Part 24 — (August, 1942) — Drag-in contamination in gold plating. Theory and derivation of the Drag-in Equation.

Part 25—(September, 1942)—Drag-in contamination continued with application to anodizing.

Part 26 — (October, 1942) — Drag-in contamination continued. Applications to gold plating.

Part 27—(November, 1942)—Electropolishing of gold. Theory and formulas.

Part 28—(January, 1943)—Summary and contents index.

The Paint Laboratory Note Book. By John Stewart Remington. Published by Chemical Publishing Company, Inc., 234 King St., Brooklyn, N. Y. 138 pages, 5½ x 8½ inches, 15 illustrations. Price, $2.75.

Designed as an aid to paint manufacturers, especially the smaller plants, this note book contains many helpful suggestions for carrying out rapid tests on samples of pigments and paints before conducting tests on larger quantities. This textbook, embracing six chapters, in reality is a second and enlarged edition of an earlier note book by the same author. The new, larger volume incorporates quantitative as well as simple tests and should prove useful to paint manufacturers, especially the smaller firms who do not employ a qualified chemist.

The book covers Simple Tests for White and Colored Pigments; Other Tests on Oils, and Some Physical Tests and, in addition, it includes useful data that should be helpful to the works chemist, especially the junior staff.

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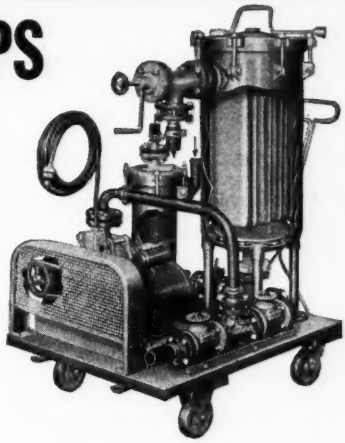

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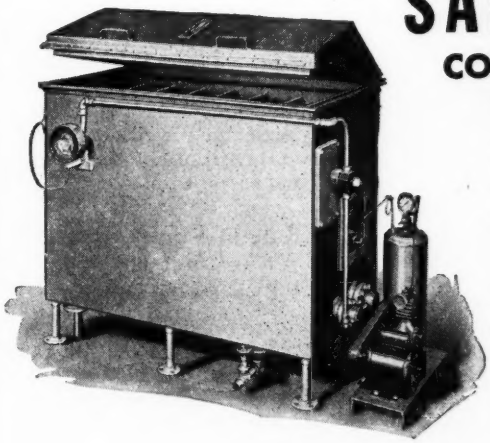

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Finishing Highlights of '42

The following are abstracts of papers presented on important developments in the finishing field during the past year.

Nickel Plating Magnesium Alloys

By W. S. Loose

A METHOD for electrodepositing adherent nickel plates on magnesium alloys has been developed. The process consists of a series of steps in which the metal is first etched slightly in a chromic-nitric-sulfuric acid bath, then treated in a hydrofluoric-nitric acid solution to deposit a fluoride film prior to being plated with nickel from a nickel borofluoride bath. The effect of concentration of the various constituents both in the pretreating and in the plating baths is discussed. Both nickel fluoride and borofluoride plating baths have been studied extensively as to the effect of concentration, current density, pH and temperature on the type of deposits produced. The deposits obtained on magnesium alloys are soft, adherent, and easily buffed to a high luster. They withstand indoor and dry atmospheres very well, but are not recommended for moist, corrosive conditions due to corrosion of the magnesium produced by the nickel-magnesium couple through porosity in the deposits.

New Work on Tin Plating from Ammonium Stannous Oxalate

By Frank C. Mathers and Paul H. Johnson

IT was found that glue, after hydrolysis by boiling a water solution of same, was as good an addition agent as peptone in the ammonium stannous oxalate bath. The deterioration of the bath was found to be due to oxidation of stannous to stannic ions. The bath can be regenerated by adding some spongy or finely divided metallic tin and boiling.

Electrolytic Polishing of Silver

By L. I. Gilbertson and Otis M. Fortner

IN 1926, E. S. Hedges observed that the film which forms on a silver anode in a cyanide bath at high current density is periodically formed and dissolved. A study of this phenomenon has shown that under controlled conditions of temperature, stirring rate, and current density in a cyanide plating bath this recurrent film formation can be employed to brighten or polish silver. The process is particularly well adapted to use in the fabrication of small, irregularly shaped objects.

The Rate of Film Formation on Metals

By Benjamin Lustman

THE experimental results on the rate of formation of thin reaction product films on metals are critically reviewed and compared with results on the rate of growth of relatively thick reaction products or scales. The two processes of film and of scale formation are shown to be essentially different with respect to time and temperature effect on rate of formation. An exponential equation is found to apply to the growth of certain films, and a parabolic equation

to that of others. Characteristic minima are exhibited in the temperature variation curves of film formation rate. The surface structure of the metal, the orientation of the underlying metal crystals, the structure of the reaction products, and the magnetic state of the metal are found to affect the rate of film growth anomalously. The various theories of film growth are critically discussed on the basis of these experimental facts and the inadequacies of each theory are pointed out.

The Rate of Oxidation of Copper at Room Temperature

By Addison H. White and Lester H. Germer

ELECTRON diffraction was used to measure the rate of the reaction between copper and pure dry oxygen at room temperature and 20 mm. pressure. The experimental technic is described in detail. The empirical rate of reaction is found to be inversely proportional to $(t + c)$ for the time t greater than two minutes; the constant c is experimentally indistinguishable from zero but must be finite. It is estimated that the local thickness, x, in Ångstrom units of the oxide film increases according to the equation: $x = 4 + 6.5 \log_{10} t$ where t is measured in minutes and is greater than 2 min. A limiting film thickness of about 50 Å is predicted by this equation.

Studies on Overvoltage. XII. Some Unusual Overvoltage Phenomena

By A. L. Ferguson and H. Bandes

THIS is the first report on a series of researches in which an intensive study is to be made of factors related to overvoltage, so as to get a better insight into the mechanism of electrode potential and overvoltage. A list of questions concerning electrode potentials and overvoltage is given; also a list of possible stages in the process of ion discharge. Equipment is briefly described for obtaining the oscillograms shown of rapid changes in electrode potentials. Peculiar maxima in the IR and cathode curves are discussed; the oscillograms presented show the influence of previous charge, current densities, and time of charge on these maxima. Agitation of electrolyte affects charge and discharge potentials. The results obtained can be explained if it is assumed that the back potential is due to the liberation through discharge at the electrode, even at the lowest applied potentials, of a sufficient amount of active material to set up a back potential equal to the applied potential, and that a part, at least, of the continuous current is required to replace that portion of the active material continually lost by diffusion or otherwise.

Studies on Overvoltage. XI. Long Time Charge and Decay Phenomena

By A. L. Ferguson and H. Bandes

THIS paper presents additional material, obtained with practically the same equipment as described in Part XI, and deals largely with long time charge and decay curves for anode, cathode, and total cell potentials when cells are polarized to different current densities. The curves show that the charge and discharge processes are complex in nature, yet fairly reproducible. The fundamental nature of the processes appears distinctly different for anode and cathode, yet for each electrode the variation with current density is not pronounced. A fairly consistent qualitative effect due to agitation of the solution is observed. Much of the material presented supports the contention stated in previous papers that cathode overvoltage is due to more than one factor and that the same explanation cannot apply to both anode and cathode; also, that the most

important point is the discharge of ions at the electrodes even at the lowest applied potentials. Breaks are observed in both charge and discharge curves at approximately 1.23 v. and 1.58 v., which are respectively the theoretical potential of the oxygen-hydrogen cell and the observed decomposition potential of water.

Some Corrosion Characteristics of High Purity Magnesium Alloys

By R. E. McNulty and J. D. Hanawalt

THE corrosion behavior of high purity magnesium alloys has been followed by means of the hydrogen evolution method. These data, combined with anodic and cathodic polarization curves, suggest an electrochemical mechanism for the process. Although trace impurities are still effective in the steady state, the encroachment of the anodic film over the cathodic particles causes a high "pore resistance," which tends to stifle the reaction. The characteristics of the hydrogen evolution curves are thus explained.

Theory of Oxidation and Tarnishing of Metals. I. The Linear, Parabolic and Logarithmic Laws

By H. A. Miley

THEORETICAL considerations are given to the discovery, some twenty years ago, of the three laws governing the corrosion of some common metals, the development of their equations, and the constants in the equations. The logarithmic law was really discovered in 1922, a year before the discovery of the linear and parabolic laws, but it was not until after its rediscovery in 1939 that explanations became available for an increasing number of discrepancies. An electrochemical interpretation of the ionic theory provides a basis for developing the equations of these laws. The diffusion theory had never provided an adequate explanation of the parabolic law. The ionic theory postulates the movement of cations and electrons outwards and of anions inwards across the growing film, and the electrochemical interpretation of this theory makes it theoretically possible for a continuous film to obey two or more of these laws by turns. The growing film may be compared with a current-producing cell, the requirements for changing from a parabolic growth rate to a logarithmic rate being provided by polarization. The critical film thickness, beyond which polarization may be expected, is influenced by all of the factors that affect the perviousness of the film. The linear law may be obeyed sometimes when the resistance of the film is small enough to permit the mechanics of the film building process to control the rate of growth. Some results from the literature are discussed in the light of this electrical theory.

Thin Oxide Films on Iron

By E. A. Gulbransen

A VACUUM microbalance technic for the study of chemical reactions occurring on metallic surfaces is described. Preliminary curves are presented for the oxidation of pure electrolytic iron from 25 deg. C. to 400 deg. C. and at various pressures of oxygen. Attempts are made to correlate the data with the various mechanisms proposed for oxidation reactions. A suggestion is made that the overall-rate may be thought of as a sum of three individual rates. These are: (1) a rapid initial rate; (2) an intermediate reaction which involves the logarithm of the difference between an extrapolated parabolic law and the experimental value as a function of time; and (3) a parabolic law which is found to hold above a certain temperature and film thickness.

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Corrosion of Binary Alloys

By Ralph Landau and Carl S. Oldach

CORROSION and potential studies under controlled conditions are reported for the binary systems Fe-Ni, Fe-Co, Fe-Mn, Ni-Cu, Ni-Co, Ni-Mn, Ni-Ta. Data from the literature on these and other binary solid solution alloys have been collected and critically examined. The passivity of these alloys is discussed in relation to the influence of the corroding medium, nature of the pure metals, and so forth, and the practical importance of passivity limits is noted. Passive metals in alloys are contrasted with noble metals. Regularities with respect to position in the periodic table, minima in the corrosion-composition curves are observed, both of which are of possible practical importance.

Anodic and Surface Conversion Coatings on Metals

By Junius D. Edwards

THE widespread application of anodic and surface conversion coatings on metals is demonstrated by this discussion of protective coatings on aluminum, magnesium, zinc and iron. Aluminum is unique in many ways, in its chemical and electrochemical behavior, and the anodic treatment of aluminum has reached an advanced stage of development. A detailed study of the chemical and electrochemical coating of aluminum is therefore helpful in connection with other metals. Not only for the role they play alone but for the part they play in promoting paint protection and adhesion, are these surface coating proving indispensable to the user of metals.

Cathodic Protection

By R. H. Brown and R. B. Mears

IF the corrosion is electrochemical, it may be concluded from this work that:

1. In order that protection may be complete, the potential of the cathode areas must be polarized to a potential equal to or more anodic than the open circuit potential of the anodes.
2. In order that protection may be complete in solutions where the cathodic polarization is large compared with the resistance drop, the cathode must be polarized to the open circuit potential of the anodes.
3. In order that protection may be complete in solutions where the cathodic polarization is small compared with the resistance drop, the cathode must be polarized to a potential more anodic than the open circuit potential of the anodes.
4. The current required for complete protection will depend upon the current required to polarize the cathode to a potential equal to or more anodic than the open circuit potential of the anode.
5. The current required for complete protection will depend upon the position of the auxiliary anode relative to the position of the local anodes and cathodes.
6. The less the potential drop between the auxiliary anode and the local cathodes, the less the current required.
7. Special attack or inhibition may be produced by the products of electrolysis resulting from the application of cathodic current.
8. Special attack on surfaces which are made cathodic may be beneficial if the type of attack is also altered.

Single Metal, Binary and Ternary Alloy Deposition from Thiosulfate Solutions

II. Binary Alloy Deposition of Copper-Nickel, Copper-Cadmium and Copper-Zinc Alloys from Thiosulfate Solutions

By D. C. Gernes and G. H. Montillon

RESULTS are presented of an investigation to determine the conditions required for the deposition,

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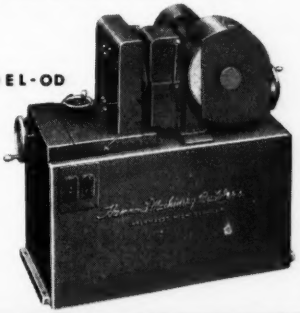

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from thiosulfate solutions, of binary copper alloys having a wide range of copper content. The variation of the copper content of the deposit with current density and the copper content of the bath was determined quantitatively for copper-nickel and copper-cadmium alloy deposits, whereas the effect of agitation, temperature and other changes in bath composition were investigated only qualitatively. A few data were also obtained on the cathode current efficiency and sulfur content of the deposits. In the deposition of the copper-zinc alloys, the principal effects studied were those of bath temperature and current density on the copper content of the deposit. Recommended bath composition and plating conditions are given for the deposition of copper-zinc alloys having the color and copper content of the ordinary yellow brasses.

"Null" Methods Applied To Corrosion Measurements

By J. M. Pearson

THE use of null methods to eliminate IR drops from measurements of electrode potential in the presence of polarizing current furnishes a new tool for corrosion studies. When IR drop corrections are made in the null circuit by using a.c., polarization potentials are measured to the outside of the "electrode boundary." When increments of d.c. are used instead of a.c., the effects of film resistance are also nullified. It is possible to measure the film resistance directly. Following Müller's picture of the local action theory preliminary results indicate that the two polarization curves and the film resistance curve may furnish us criteria from which the amount of local action current can be calculated. Arguments in favor of such measurements are given, along with results of experiments.

Some Mechanisms of Alloy Corrosion

By Ralph Landau

THE experimental data reported in the preceding paper are examined with a view toward clarifying the mechanism of alloy corrosion. The local cell theory, in an extension to alloys proposed by the author, gives a plausible explanation for the data. It is indicated that electrochemical factors external to the metal are chiefly responsible for the behavior of alloys in non-passivating media. In passivating media, the corrosion is largely a function of film stability, and the alloy electronic structure may be of importance. Due to the complexity of the variables affecting alloy corrosion, it does not seem advisable at this time to place emphasis on phenomena within the alloys, as is done by the theories of Tamman, Russell, Uhlig and Wulff, and others.

Theory of Oxidation and Tarnishing of Metals

11. Growth Laws Under More General Conditions

By O. H. Hamilton and H. A. Miley

GROWING films on metals are compared with current-producing cells under more general conditions. The assumptions made in connection with the development of the laws are discussed. When the electrical resistances are small, the growth rate may be controlled by some mechanical limitation. Since the linear law, for such a condition, is obeyed only when the controlling factor imposes a constant growth rate, it is likely that this law is more the exception than the rule. The parabolic law is obeyed if the electrical resistances control the growth rate and it is expressed by the general equation $(y - k)^2 = K\,(t - h)$ when any constant resistances, such as that which may be required to transfer the electron and cations across the metal-film

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interface, are added to the electronic and electrolytic resistances of the films. In a film that is completely polarized, the concentration gradient diffusion of the cations and anions determines the transfer of the electrons across the film and the parabolic law breaks down. .It is shown that contradictions are involved in the assumptions usually made in deriving the parabolic growth law, and that from a theoretical point of view the actual growth curve may depart widely from a parabolic curve. The growth curve would seem to fall below the curve which would be expected if the parabolic law should be obeyed, but it cannot be predicted that it would be logarithmic. A statement is made concerning the mathematical problem which must be solved in order to have a sound theoretical basis for the derivation of laws governing the growth of oxide and tarnish films when the ions migrate by diffusion processes.

A Strange Phenomenon in Plating

By Oliver P. Watts

UPON electrolyzing a hot nickel sulfate plating solution at current densities of 35 to 60 amp./dm.^{2}, good, adherent deposits of nickel were obtained on the back of the cathode, but none on the front. The solution contained 10 to 40 g./L. $NiSO_4$ and 200 to 250 g./L. Na_2SO_4. This "back-plating" is attributed to the thick alkaline film formed on the front face of the cathode. By actual measurement it was found that only one-fourth of the current passed to the back of the cathode.

Electrodeposition of Nickel-Tungsten Alloys from an Acid Plating Bath

By M. L. Holt and M. L. Nielsen

NICKEL-TUNGSTEN alloys have been electrodeposited from the Watts type nickel plating bath which was modified by the addition of small amounts of sodium tungstate. Alloy composition and current efficiencies were studied at various cathode current densities, bath pH's and bath temperatures. Many of the cathode deposits obtained were non-metallic in appearance and in some cases did not adhere to the basis metal; however, other deposits were metallic in appearance, smooth, adherent and readily buffed to a high polish. These metallic deposits contained from 5 to 10 per cent of tungsten and were obtained only when conditions of electrolysis were carefully controlled. For purposes of comparison, the effect of the various electrolysis conditions on the current efficiency of the nickel plating bath (without tungstate) was also studied.

The Theory of the Potential and the Technical Practice of Electrodeposition

V. The Two-Dimensional Rectangular Enclosures

By Charles Kasper

THIS is the fifth in a series of papers on the interrelation of the theory of the potential and the technical practice of electrodeposition. The paper deals with rectangular enclosures. It is shown how these systems can be employed to analyze practical problems in electrodeposition, for example: (1) the uniform plating of a circular cylinder with an enclosing anode in the form of a square; (2) the use of a wedge to plate into an internal right angle; (3) the curvatures that must exist at the apex of the angle in order that procedure (2) be practicable; and, (4) the effectiveness of insulating one side of the wall of a right angle to obtain a more uniform current distribution. A number of original problems in the theory of the potential are also included.

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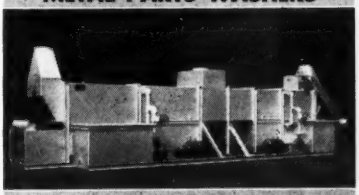

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An Electrolytic Study of Linear Diffusion of Silver Salts

By H. A. Laitinen

THE theory of diffusion is applied to the case of a single metal salt undergoing electroreduction to the metal, with the diffusion process occurring in a linear column and assuming virtually complete concentration polarization of the cathode. The theoretical current-time relationship is applied to the diffusion of silver nitrate, silver acetate and silver sulfate and compared with experimental data. A comparison is made between the diffusion of pure silver salt solutions and the diffusion of silver ions in the presence of an excess of an indifferent ionized salt. The effect of an indifferent salt is shown to be analogous to the suppression of the migration current in polarographic current-voltage curves.

Anodic Treatment of Plain Carbon Steels

By Robert L. Imboden and Robert S. Sibley

SPECIMENS of low carbon steels, previously prepared on 3/0 metallographic paper for metallographic study, were anodically treated for polishing and etching. Five electrolytic baths were found satisfactory, three of which gave excellent results. One bath, composed of 40 per cent sulfuric acid, 46 per cent phosphoric acid, 4 per cent dextrose, 10 per cent water, used a current density of 1.5 to 4.5 amp./sq. in. (23 to 70 amp./dm.^{2}), bath temp. of 28 to 40 deg. C., and 5 to 10 minutes for polishing. Another bath, composed of 15 per cent sulfuric acid, 65 per cent phosphoric acid, 5 per cent chromic acid, and 15 per cent water, used 3 to 7 amp./sq. in. (47 to 109 amp./dm.^{2}), bath temp. of 42 to 55 deg. C., and 3 to 5 minutes for polishing. The third bath was organic, 765 acetic anhydride, 185 cc. perchloric acid, 50 cc. water, 0.25 to 0.8 amp./sq. in. (3.9 to 12.5 amp./dm.^{2}), bath temp below 30 deg. C., and 5 to 10 minutes for optimum polishing. Etching of the samples occurred at slightly lower current densities. Theory of electropolishing is discussed covering (1) preferential removal of scratch ridges; (2) longer time required by vigorous agitation; (3) formation of undulations; (4) pitting around surface inclusions; and (5) mechanical polishing vs. electropolishing. Types of cells applicable for preparation of samples for metallographic study are shown. It is important to perform a two-dimensional study on the specimens if a true metallographic history of the sample is desired. Sixteen micrographs are shown.

The Corrosion Resistance Afforded by Bright Dipped Cadmium Coatings

By Gustaf Soderberg

OUTDOOR exposure tests in a highly corrosive industrial atmosphere have shown that the normal use of a chromic acid bright dip, which removes 0.00022 mm. (0.000009 in.) or less of plate, has no adverse effect on the corrosion resistance afforded by cadmium coatings more than 0.0025 mm. (0.0001 in.) thick and that a definite improvement in corrosion resistance after this treatment has been found at a thickness of 0.0075 mm. (0.0003 in.). This beneficial effect is not expected from bright dips which do not strongly passivate the surface.

Diffusion Theory of the Codeposition of Gold and Copper

By Malcolm Dole

FACTORS influencing the composition of electroplated alloys are discussed. Data of Zvolner on the composition of gold-copper alloys are critically examined and interpreted in the light of relative rates of diffusion and ionization of the complex ions in-

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volved. The role of diffusion is stressed, as this factor seems to have been largely overlooked, but it also appears to be necessary to take into consideration the rate of ionization of the copper complex cyanide ion in order to explain the composition of the alloys.

High-Speed Analysis and Control of Plating Solutions

By George Jernstedt

BY use of various rapid methods, analysis time for plating solutions was reduced from one-tenth to one-half the original, while at the same time preserving the required accuracy. The use of the centrifuge for analysis of carbonate and free cyanide was investigated. The spectrophotometer was employed to analyze nickel plating solutions. Rapid methods for the control of plating solutions by routine additions were shown, and a circular slide rule was developed for routine calculations. Analysis reports were standardized and made to record analytical data, additions made, the time additions made, and remarks on solution operation.

Cathode Films in Tungstate-Containing Plating Baths

By M. L. Nielsen and M. L. Holt

EVIDENCE for the presence of a cathode film formed by electrolysis of an acid tungstate solution is presented. This film, transferred with the cathode to a nickel plating bath, was found to prevent deposition of nickel, the current being dissipated in liberation of hydrogen. It was found that the film was removed from the cathode by immersion in alkaline solutions and in an oxidizing solution. It is believed that this cathode film operates with varying degrees of effectiveness in an acid bath used for plating nickel-tungsten alloys, and accounts for the type of deposits obtained. A mechanism is proposed to explain the codeposition of tungsten with nickel and other metals.

Some Observation on the Formation and Stability of Oxide Films

By Earl A. Gulbransen

THE existence, formation and stability of oxide films on iron, stainless steel and chrome iron are studied using a vacuum microbalance technic. A low temperature hydrogen reduction technic is developed and used to study oxide film formed under a wide variety of experimental conditions. Using these technics the air film formed on a specimen of polished, annealed, pure electrolytic iron is shown to weigh 0.44×10^{-6} g. per cm.^{2} which corresponds to a theoretical film thickness of 29 Å. A similar specimen of passive iron is shown to have a film weighing 1.16×10^{-6} g. per cm.^{2} or 78 Å. Clean, degassed electrolytic iron is shown to react readily with oxygen at room temperature and at pressures as low as 10^{-6} atmosphere 0_2 and with water vapor. At 800 deg. C. oxygen is shown to react with iron at pressures as low as 3.3×10^{-7} atm. Preliminary oxidation curves of stainless steel, chrome iron and pure iron are presented and discussed. The behavior of chrome iron and stainless steel in a vacuum of 5×10^{-6} mm. Hg at 600 deg. C. and in hydrogen atmospheres at 600 deg. C. and 800 deg. C. is discussed.

The Adherence of Thick Silver Plate on Steel. II.

By H. Lance Crosby and L. I. Gilbertson

PHOTOMICROGRAPHIC examination of silver electrodeposited on steel indicates that the adherence of silver to steel is dependent on factors other than mechanical interlocking. Evidence indicates that the strike produces crystal nuclei at the edges of ferrite crystals and that the columnar, usually twinned, crystals

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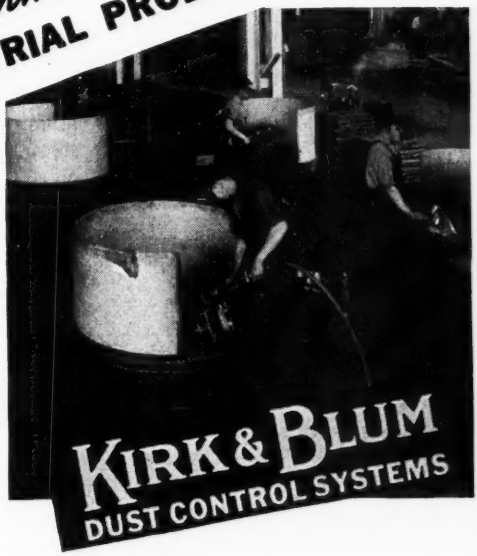

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which are plated on silver-struck steel grow from these nuclei. It appears that the most important factor in the bond between silver and steel is the intra-atomic bond between closely associated crystals of ferrite and silver and that this condition is favored by the use of a silver strike before plating. Previous reports that a strike is essential to the best adherence are confirmed.

The Structure of Brush-Plated Silver

By H. Lance Crosby and L. I. Gilbertson

THE deposition of silver by means of a brush electrode and a paste type electrolyte results in a lamellar, microcrystalline deposit. The low porosity of these deposits may be the result of the lack of channels through the deposit of the basis metal.

An Interpretation of the Mechanism of Bright Electroplating

By John A. Henricks

PREVIOUS theories on the behavior of brighteners are reviewed, and a new interpretation of the phenomenon is given in the light of the more recent developments in bright plating. The possible brightening mechanisms of commercially successful bright zinc, bright cadmium, and bright nickel baths are considered. A truly bright deposit is defined as one in which the specular reflection of the plate is superior to the specular reflection of the basis metal. A theory is proposed which states that when bright deposits are obtained by the use of organic addition agents, the brightness is brought about by the action of an absorbed organic material of the acid inhibitor type which may be formed by cathodic reduction and which may be a colloid, working in conjunction with an inorganic colloid, the latter being a precipitated metal salt. This theory is extended to interpret the action of several less potent brighteners in various baths that appear in the literature.

Tin Plating from the Potassium Stannate Bath

By Martin M. Sternfels and Frederick A. Lowenheim

CHARACTERISTICS of the potassium stannate-potassium hydroxide system are described, and its applications to tin plating are outlined. The effect of variations in bath composition and in operating conditions upon plating characteristics is traced. Because of much higher solubility and favorable solubility vs. temperature relationships, as well as higher conductivity, and a wider range of useful current densities, the potassium stannate bath has many advantages over the conventional alkaline bath. Possible fields of application are indicated, with special reference to the electrotinning of steel strip.

Control of Ammonia in the Electrodeposition of Brass

By J. H. Monaweck

A BETTER method of determining the concentration of ammonia in a brass plating bath is detailed. The composition of brass plate vs. the analyzed concentration of ammonia in a given plating solution is also recorded. It was found in making up a brass plating bath that the heat of reaction of the ingredients caused decomposition of part of the cyanide radical and the formation of a certain concentration of ammonia. No new brass solution analyzed less than 0.127 g./L. of ammonia.

Electrodeposition of Iron-Tungsten Alloys from an Acid Plating Bath

By M. L. Holt and Rodney E. Black

IRON-TUNGSTEN alloys have been electrodeposited from the ferrous ammonium sulfate iron plating bath which was modified by the addition of small amounts of sodium tung-

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state. Alloy composition and cathode current efficiencies were studied at various current densities, bath pH's and bath temperatures. The tungsten content of the alloy was found to increase somewhat with: (a) increase in tungsten content of the bath; (b) decrease of cathode current density; (c) increase of bath temperature; and (d) decrease of bath pH. An increase of tungsten concentration in the bath was found to increase the current efficiency of alloy deposition. The most satisfactory alloy deposit was obtained from a bath containing 1 to 2 g./L. of added tungsten. A rather high current density, a bath pH of 2, and a bath temperature of 75 deg. C. were found to be the best conditions of electrolysis. It is suggested that reduction of tungstate ion at the cathode involves reduction by atomic hydrogen and/or by "unstable, active" iron.

Coffing Products Catalog No. G-6. The Coffing Hoist Co., Danville, Ill., is now issuing a 12-page illustrated catalog containing condensed descriptions, specifications, and prices on its complete line of ratchet lever hoists, electric hoists, spur geared chain hoists, differential chain hoists, I-beam trolleys, load binders, and utility maintenance tools. Copy free upon request.

Metal Cleaning for War Products. The Alvey-Ferguson Company, 162 Disney St., Cincinnati, Ohio, is now issuing a four-page folder illustrating and describing a well-rounded line of equipment for cleaning war products such as cartridges, gun barrels, shells and similar products. The folder illustrates a variety of type machines for the particular job at hand to wash, rinse, and dry products in various stages of production. Although the manufacturer claims these machines are now used for war production, they are also readily convertible to peacetime needs.

Copy of Alvey-Ferguson Company folder, "Yes! All Metal War Products Must Be Cleaned,' free upon request.

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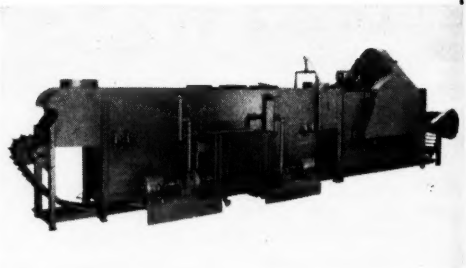

The above machine is a Blakeslee double tank, wash, rinse, blow-off and steam recirculatory air type dryer. The machine is designed especially for washing machine castings for a 24-hour day.

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Finishing Facts

Portable Electric Gages Speed Production of Tank and Plane Parts

PORTABLE electric gages which speedily check the thickness of surface coatings of precision-machined plane and tank parts are helping to speed war production, according to H. P. Kuehni, gage expert in the General Electric Company's general engineering laboratory.

"Precious time and vital materials are being saved in war production, thanks to the development years ago of electric gages for measuring the thicknesses of paint on such consumer products as automobile bodies and refrigerator cabinets," Mr. Kuehni said. "Right now manufacturers of tank and aircraft engine parts are relying on such gages for checking surface thicknesses, but in the post-war period industry in general can be expected to adopt them even more extensively."

To prevent corrosion and to increase wearing qualities, steel bearings going into plane and tank engines are lined with lead-bronze, copper, silver or heavy babbitt while other steel parts often are plated with chrome, nickel, or cadmium. The thickness of lining or plating must be accurate to a thousandth of an inch and can be measured by the electric gage.

Close-up view of G-E thickness gage being applied to inner surface of aircraft bearing to measure thickness of bearing surface.

Until a few years ago such parts were checked by complex processes which involved selecting a few at random as they came off the assembly line and cutting them open. Generally the thickness of plating on a part was checked by measurement under a microscope. In another method, wall thickness was measured before and after the lining was removed, the differ-

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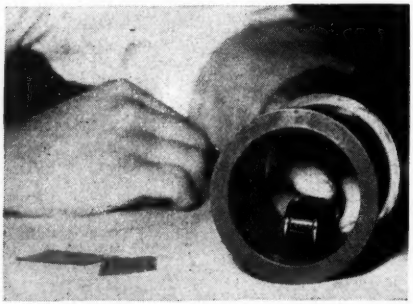
ence between the two measurements representing the thickness of the lining.

Today, however, the portable electric gage measures the thickness of lining or plating without marring any of the parts, thereby saving time and materials. The main part of the gage is a seven-pound portable indicating unit with a dial marked off in thousandths of an inch. A small cylindrical gage head containing an electromagnet is connected to the indicating unit by a lightweight cable. The instrument is plugged into an ordinary alternating current outlet.



A laboratory technician uses a G-E thickness gage to measure the thickness of a bearing surface.

When placed against a surface, the gage head can measure the thickness of any non-magnetic layer up to 0.3 of an inch thick and backed by steel. The head sets up electric currents in the instrument which vary in intensity with different layer thicknesses. By measuring the currents, therefore, the instrument can indicate the exact thickness on a dial large enough to be read at a glance at production line speed.

The portable electric thickness gage was developed originally to measure the thickness of paints. The gage can also measure the thickness of sheets of glass, or mica, provided they are placed on steel tables or otherwise backed by steel at the point of measurement.

A different type of gage has been developed for measuring the thickness of non-magnetic metal sheets and plates such as aluminum, copper, brass and bronze. This type of gage is used to check the wall thickness of magnesium and aluminum alloy castings rolling off assembly lines in mass quantities, and no steel backing is necessary.

Color Goes To War

THE green chlorophyll of nature has the unusual property of reflecting infra-red light in good abundance. This quality is not found, however, in most green pigments. Thus a green leaf and a green paint which may seem to be perfectly matched to the normal eye may, in an infra-red photograph taken from an airplane, show up as white and black.

According to data released by the Color Research Laboratory of the Eagle Printing Ink Company, Division of General Printing Ink Corporation, New York, pigments are to be formulated which have high reflectance in infra-red. These are being used for paints and finishes, and with them modern warfare is able to do an excellent job of camouflage.

Color is also going to war in many other ways. Tanks are painted white on the inside to repel heat and to gain all possible visibility from the trickles of light that enter from the outside. Shells of different gauges are marked in different hues to aid instant identification. In aerial target practice, bullets stained in different hues leave telling marks which later may be examined, and the gunners accordingly credited with hits.

Facts about
Metal Polishing

Three Factors of Efficient Polishing

1. The Metal

The physical characteristics of the metal have to be taken into consideration. Carbon steel, stainless steel, chilled iron, malleable iron, cast iron, cast or sheet aluminum or cast brass each offers different polishing problems.

2. The Condition of the Surface of the Metal and the Amount of Stock to be Removed

It is not possible to specify the size of Alundum grain for the first operation without knowing the condition of the surface of the metal. The surface may be covered with scale or the scale may have been pickled or tumbled off. In the case of stainless sheet the surface may or may not contain a large number of pits which, if present, would necessitate "spot polishing" and greater stock removal. Norton engineers are available to assist you in studying the job in your own plant.

3. The Operating Speed of the Polishing Wheel

It is necessary to study this factor in order to determine how to set up the most economical polishing wheel. The average speed of polishing wheels is approximately 7500 surface feet per minute. If the speed of the wheel is much higher, say 9000 surface feet per minute, it is necessary to set up a denser wheel head by increasing the strength of the bond mix by approximately 5% (lower speed/ vice versa).

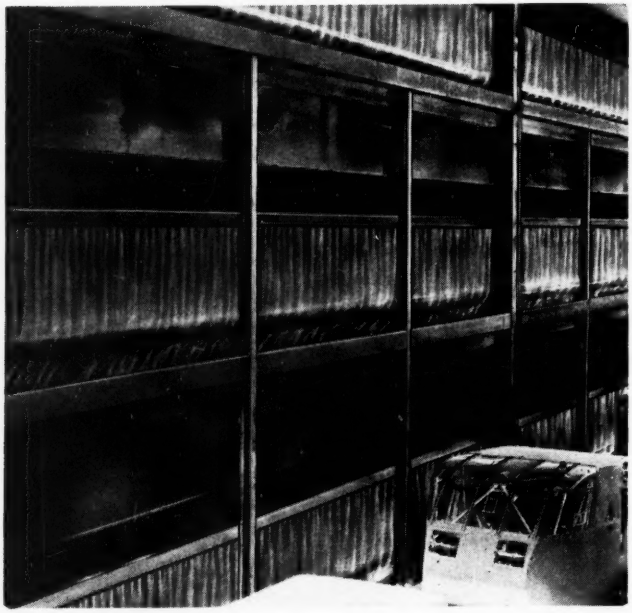
NORTON COMPANY, Worcester, Mass.

G-147

NORTON ABRASIVES

Binks Installs Three-Deck Spray Booth

BINKS Manufacturing Company, 3114-40 Carroll Ave., Chicago, Ill., recently installed what is believed to be one of the world's largest three-deck spray booths, for a large mid-west aircraft manufacturer.



Binks Three-Deck Spray Booth

This unusual new type spray booth is 150 feet long and over 30 feet high. Three sets of water curtains, one above the other, wash the air and carry out the fumes and over-spray in the painting operation.

An equipment room is provided which houses motors, starters, blowers, and pumps necessary for the operation of the three-tier spray booth.

Report on Use of Dresinate. The first of a series of reports on the use of Dresinate in specific industries has been made in a booklet just issued by Hercules Powder Company for metal cleaning.

Dresinate, the neutral sodium salt of selected rosins, is described as a dry, free-flowing powder, with each particle water-soluble. Its uses for extra-action metal cleaning compounds are set forth in the booklet, which includes comparison tables and photographs of metal surfaces tested.

The laboratory photographs compare the action of Dresinate on metal with that of a standard cleaner, both in the electrolytic method and in a bath of alkaline solution at 90 deg. C. for ten minutes. Other photographs compare the wetting action on powdered coal of a straight three per cent alkali (TSP) solution, as against the action of a Dresinate - fortified alkali.

The booklet, issued by the Paper Makers Chemicals Department, Hercules Powder Company, Wilmington, Delaware, explains that Dresinate, in its various types, produces rapid wetting of surfaces, emulsifies oils, greases, and other types of dirt removable with alkaline cleaners, and maintains the soil in suspension to assure a thorough rinsing action. It also makes possible a replacement of solvent bath by alkaline baths.

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- ☐ Chemical Vapor Cleaning
- ☐ Chromatizing
- ☐ Cleaning Metals Before Processing
- ☐ Cleaning Prior to Plating
- ☐ Cold Immersion Cleaning
- ☐ Cold Spray Cleaning
- ☐ Floor Maintenance
- ☐ General Plant Maintenance
- ☐ Glass Cleaning
- ☐ Hot Immersion Cleaning
- ☐ Magnesium Processing
- ☐ Paint Camouflage Cleaning
- ☐ Paint Dept. Maintenance
- ☐ Paint Stripping
- ☐ Phosphatizing
- ☐ Scale Removal and Control
- ☐ Stainless Steel Processing
- ☐ Steam Boiler Maintenance

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News OF THE INDUSTRY

New War Products Development Laboratories

Announcement is made by The Curran Corporation, Malden, Mass., of the opening of a new War Products Development Laboratory to be located in the Processing Plant, Prospect Mills, Lawrence, Mass. It is stated that the purpose of the laboratory is to put its creative chemists on the development of both offensive and defensive war chemicals.

Problems will be attacked from a new angle and without reference to contemporary work.

C. A. Babbitt Appointed Field Engineer at Norton Philadelphia Office

C. A. Babbitt, of Norton Company, Worcester, Mass., has been appointed Field Engineer for the territory comprising New York City, New Jersey and Philadelphia. He will make his headquarters at the Norton Philadelphia office.

Walter Gibson Joins Detroit Rex Advertising Staff

Walter E. Gibson, formerly advertising manager of the Swartzbaugh Mfg. Co., Toledo, Ohio, has joined the advertising staff of Detroit Rex Products Company, 13017 Hillview Ave., Detroit, Michigan.

Dr. Walter R. Meyer to Direct Enthone's Research

Dr. Walter R. Meyer recently became Technical Director of The Enthone Company, New Haven, Conn. He will direct the development of new products and processes for the metal finishing industry as well as to assist in problems attendant with the application of the company's products in the finishing of war goods.

Dr. Walter R. Meyer

Dr. Meyer received his B.S. in chemistry from Sheffield Scientific School of Yale University, in 1928, and his Ph.D. in 1938 from the Department of Metal-

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lurgy, School of Engineering of Yale University.

From 1929 to 1931 he was plant chemist of Sargent & Co., New Haven, Conn., and from 1931 to 1938, he was electrochemist and metallurgist of the General Electric Co., Bridgeport, Conn. For the past four years he was Editor of "Metal Finishing" (Metal Industry) magazine and Editor of four editions of "Plating and Finishing Guidebook."

Dr. Meyer is widely known about the country for his many technical papers and lectures and is a member of The Electrochemical Society, American Electroplaters' Society, Electrodepositors Technical Society (England), Faraday Society, American Society for Metals and Sigma Xi.

Miller Appointed Field Engineer for Norton Detroit Territory

A. J. Miller, who has been in the Detroit office of the Norton Company, Worcester, Mass., for a number of years, has been appointed Field Engineer for that territory.

Detroit Rex Products Company Holds Annual Meeting

The 1942-43 Annual General Conference on sales and service of the Detroit Rex Products Company, manufacturers of industrial metal cleaning equipment and chemical cleaning compounds, was held December 11th and 12th at the Fort Shelby Hotel, Detroit, Mich. One hundred and ten sales and service engineers, including men from all field and branch offices of the company, were in Detroit for this important conclave.

On the morning of December 11th the men visited the main and subsidiary plant buildings and offices in a personally conducted tour. Metal washing machinery and equipment, now produced exclusively for use in war production plants, was seen in various stages of construction.

At the noon dinner meeting, which officially opened the conference sessions, President Robert A. Emmett outlined briefly importance phases of company past history and discussed research and planning for the post war period.

W. W. Davidson, Vice President in charge of sales, conducted the conference and introduced other members of company personnel, including G. E. Powers, Treasurer; C. F. Dinley, Sr., Vice President in charge of engineering, and A. O. Thalacker, Secretary and General Manager.

One of the primary purposes of this year's meeting was to stress the tremendous importance of maintenance and care of machinery now in operation, not only to lengthen the period of useful service of this equipment but to bring about more economical operation.

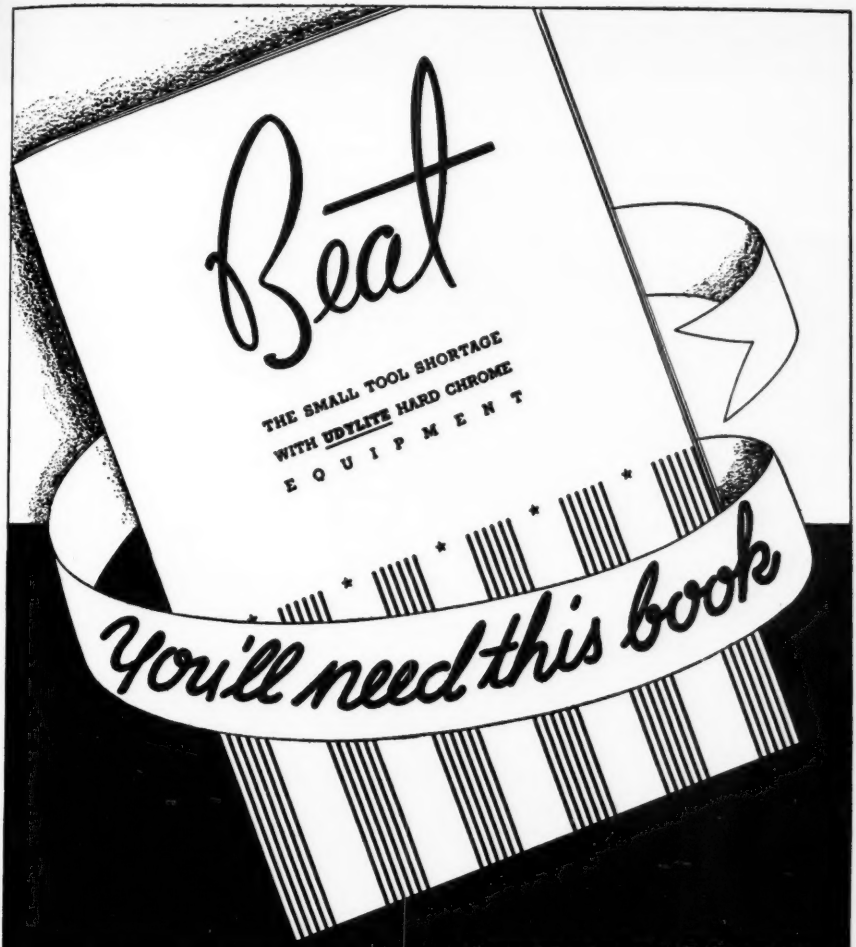
The material presented was of a highly technical nature, dealing for the most part with subjects such as: Design and Construction of Degreasers and Alkali Washers, Metal Cleaning in Aircraft Manufacturing Plants, Application and Operation of Metal Washers, and Cleaning and Finishing Problems. Photographic slides and color movies were employed by many of the speakers to emphasize the importance of their messages.

American Standards Association Appoints Dr. Blaine B. Westcott as Member of Sectional Committee

Dr. Blaine B. Westcott, chief of the materials and products chemistry division of the Gulf Research and Development Company, Pittsburgh, Pa., has been appointed a member of the Sectional Committee on Pipe Threads of the American Standards Association. The scope of the Committee covers the American (Briggs) Standard taper and straight pipe threads, plumbers' threads, threads for electrical conduit and threads for thin tubes.

Foxboro Bulletin of Operation-Time Recorders. Bulletin A-321 now being issued by The Foxboro Company, Foxboro, Mass., describes Foxboro Operation-Time Recorders, both electric-operated and mechanical, and explains the application of such instruments to the processes of various industries. Their importance in test engineering, in setting job standards, and in cost accounting and production control is discussed, and diagrams show typical installations of recorders for several different kinds of work. Complete specifications are included, for single and multiple pen instruments.

Copy of the bulletin will be sent free upon request.



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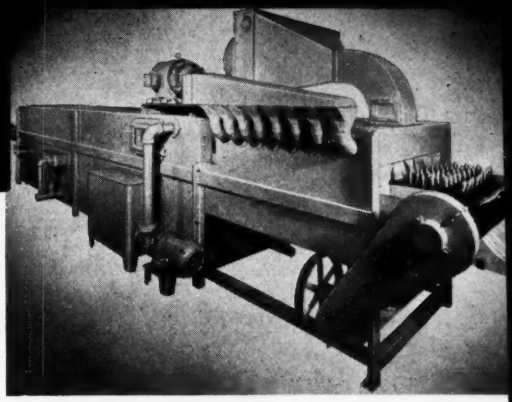
The 27 x 36-in. Wheelabrator Tumblast shown in the illustration was installed in a number of plants which manufacture metallic cartridge belt links for machine guns. Requirements of the cleaning machine include the following: It must remove all scale encrustations resulting from the heat treating processes, and remove any burrs remaining after the punching operations; the surface of the links must be thoroughly roughened to serve as a bond for the zinc or Parkerized coating (necessary to prevent corrosion); no breakage or damaging of links during cleaning is tolerated; it must be capable of maintaining a high production schedule. Loads of cartridge links are fed into the blast cleaning machine by means of an automatic loader. After a short period during which all links are subjected to the abrasive grit stream thrown by the overhead Wheelabrator unit, the cleaned links are removed from the machine. A new batch of steel links is then ready for cleaning. Inspection of the load of links being cleaned may be made at any time during the cleaning cycle. The Wheelabrator Tumblast is a product of American Foundry Equipment Company, Mishawaka, Ind.

(See October, 1942, issue.)

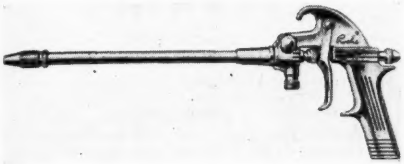
The illustration shows one of a variety of rheostat cages which were developed by the Ohmite Manufacturing Company, 4835 Flournoy St., Dept. 2H, Chicago, Ill., for use with Ohmite Rheostats. Types available include cage enclosures for table top or surface mounting, ventilated cages with perforated sides, dustproof cages, cages to house rheostats in tandem, explosion-proof cages, ventilated cages with one half closed as a splash guard, and laboratory-type semi-enclosed table-top cages. Various types of terminals can be supplied.

(See June, 1942, issue.)



The slow, time-consuming, costly method of "dunking" shells in tanks of boiling solution by means of racks, lifting the racks, lowering them into rinse tanks, then placing them over a drain section and blowing off the excess moisture by means of compressed air has, it is claimed, been made obsolete by the A-F Product Washing Machine shown herewith, product of The Alvey-Ferguson Co., 777-E Disney St., Cincinnati, Ohio. Especially designed to remove grease and chips from and dry 20, 37, or 40 mm. shells, this machine is an integral part of the production line.

(See June, 1942, issue.)

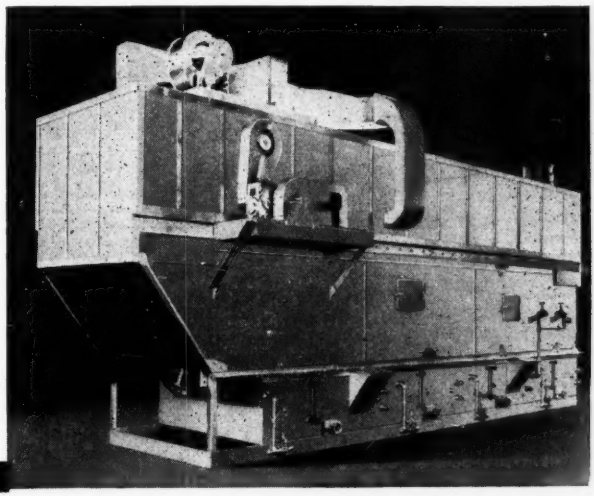


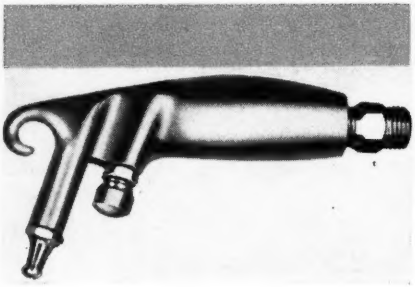
The Binks Manufacturing Company, 3114 Carroll Ave., Chicago, Ill., marketed a cleaning gun for spraying various kerosene-type cleaning fluids. The Binks Cleaning Gun is equipped with pistol grip, adjustable material control, adjustable nozzle, and ¼-in. standard pipe thread air connection. The unit uses approximately 40 c.f.m. at 40 to 50 lb. pressure. It can be used with a quart syphon cup or with a suction hose. Net weight, 1½ pounds.

(See July, 1942, issue.)

The two-strand, cross-rod conveyorized Detrex Processing Machine illustrated herewith was specially designed and built by Detroit Rex Products Co., 13005 Hillview Ave., Detroit, Mich., for the cleaning and treatment of metal parts. It follows an approved procedure for the treatment of aluminum alloy sheets used in aircraft to make them less pervious to the effects of air, and to provide a better paint bond. The machine incorporates hot alkali wash, hot water rinse, hot chromic acid dip, hot water rinse, and oven dry off. The Detrex Processing Machine, a compact self-contained unit, is built in various sizes to accommodate individual production requirements.

(See February, 1942, issue.)

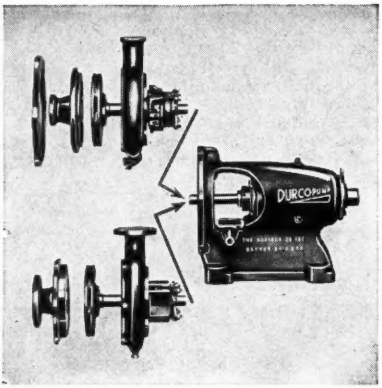




The development of a new type airduster to speed the cleaning and dusting of tools, machines, parts, instruments, and pieces to be painted was announced by the Paasche Airbrush Company, 1910 Diversey Pkwy., Chicago, Ill. The tool is said to be ideal for such jobs as cleaning dust from surfaces to be painted; blowing filings, chips and shavings from machined metal parts; cleaning tools, machines, jigs, motor armatures, and so on.

(See August, 1942, issue.)

CLEANING

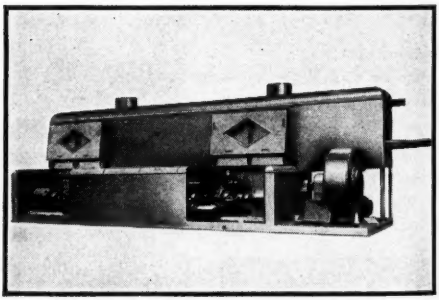


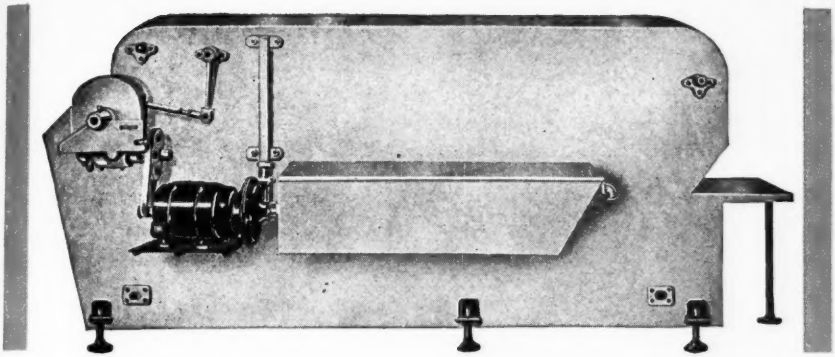
A series of corrosion-resisting pumps in which it is possible to get 480 combinations of alloys, types and sizes with heads and capacities to meet practically any requirement was developed by The Duriron Company, Inc., 450 N. Findlay St., Dayton, Ohio. Known as "Durcopumps," they have a convertible feature which is said to be exclusive. Durcopumps that are made in high-silicon irons, Duriron and Durichlor, can be converted to stainless steel pumps simply by substituting only the wet-end parts. The exchange can be made without disturbing the setting of the pump. This convertible feature is said to be especially valuable where there are apt to be changes in the liquid handled.

(See April, 1942, issue.)

The monorail type wash and blow-off unit shown in the accompanying illustration was announced by the International Conveyor & Washer Corporation, 640 E. Fort St., Detroit, Mich. One of the outstanding features of this unit is a two-pump assembly of the one wash stage. Each pump is valved on intake and discharge lines so that if one is being repaired, the other is available immediately, thus avoiding interruption to the flow of production.

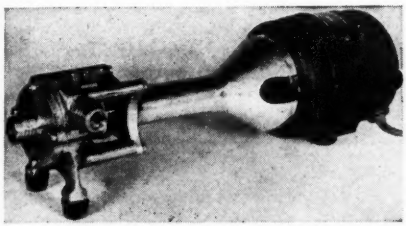
(See February, 1942, issue.)





Known as the "Sturdy-Bilt" Metal Parts Washer, a machine for the soaking, washing, drying, and preparation of either rough or finish machined metal parts, as well as complete metal assemblies, was announced by Sturdy-bilt Equipment Corp., 1441 S. 65th St., Milwaukee, Wis. The machine was specially designed for the cleaning of shells, cartridges, munition parts, and so on. The Sturdy-Bilt Washer offers a long dormant soak besides the customary method of a powerful hydro washing. Only one operator is required to perform both loading and unloading operations.

(See September, 1942, issue.)



A centrifugal type hot liquid pump of compact construction, designated as the Model EH, was introduced by the Eastern Engineering Co., 40 Fox St., New Haven, Conn. The pump is designed for use in industrial and pilot plants, laboratory and experimental applications where thin liquids at temperatures up to 500 deg. F. are handled.

(See June, 1942, issue.)

CLEANING

A cleaning unit for the precision cleaning of delicate metal parts was placed on the market by L & R Manufacturing Company, 54 Clinton St., Newark, N. J. The unit consists primarily of three jars of 1½-gallon capacity each and a revolving agitating unit. L & R Power Nofome Cleaning Solution and Instrument Rinsing Solution are furnished for use with the outfit. In operation, the parts to be cleaned are placed in a Monel and Monel mesh work basket which has an inside diameter of 5½ in. and a depth of 3⅜ in. About two to three minutes are required for each of the four cycles, depending upon the type of instruments cleaned and the condition of the parts.

(See June, 1942, issue.)

FIRE and how to fight it!

CLASS OF FIRE AND HOW TO RECOGNIZE

CLASS A FIRES

Paper, wood, fabrics, rubber, shavings.

HOW TO FIGHT IT

Quench and cool this type of blaze with water or extinguishing agents containing large percentages of water.

USE THESE EXTINGUISHERS

IN THIS WAY

Aim at base of fire. When fire seems extinguished, look carefully for signs of glowing embers and quench them.

DON'T DO THESE THINGS

Don't ever forget that portable fire extinguishers are for small, incipient fires. And don't tackle too big a blaze with hand extinguishers.

Don't fail to turn in fire alarm if there is the slightest question about your ability to handle the fire.

Don't disobey fire-fighting rules.

Don't use a water stream on electrical fires or on Class B blazes; it may make things tragically worse.

Don't use extinguishing equipment that is not "approved by Underwriters Laboratories," or by Factory Mutual Laboratories as indicated by this symbol. FM

IT'S EASY TO REMEMBER THESE FACTS ABOUT FIRE EXTINGUISHERS

CLASS B FIRES

Flammable liquids, greases, etc.

Blanket this type of fire. Cut off oxygen supply, thus preventing combustion.

If outdoors, keep wind at your back. If flowing fire, work "upstream." On 2-level fire, work from bottom up.

CLASS C FIRES

Electrical Equipment.

Blanketing or smothering is essential. *Use extinguishing agent which is a non-conductor of electricity.*

Shut off electrical current, if possible. Don't stand in puddles or wet places while using extinguisher.

GET THIS CHART FREE!

Fire-fighting equipment has a war job now. This means, simply, that most plants have to get along with present supplies of extinguishers for the duration. Therefore, Walter Kidde & Company presents this chart—to make fire-fighting more effective. If key workers understand facts about extinguishing, your Kidde* extinguishers and other equipment will kill fires faster, cut losses.

If you want reprints of this chart for your personnel, write to

Walter Kidde & Company, Inc., 131 West St., Bloomfield, N. J.

Kidde

*Formerly known as "LUX" extinguishers

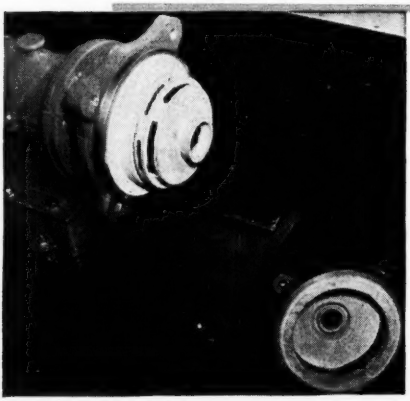
For general lighting of medium and low bay areas in foundries, machine shops, power plants, receiving and shipping departments, and similar industrial locations, a porcelain enameled high bay reflector line was announced by the Westinghouse Electric & Mfg. Co., Lighting Division, Edgewater Park, Cleveland, Ohio. This line is designed for either incandescent or high intensity mercury lamps and is available with either the locklite two-piece detachable construction, or one-piece type for conduit or outlet box mounting.

(See December, 1942, issue.)

CLEANING

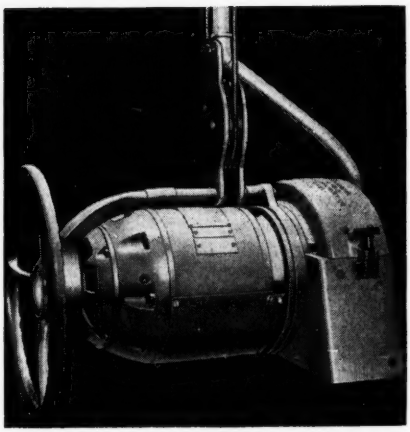
The pump shown herewith was marketed by A. R. Wilfly & Sons, Inc., Denham Bldg., Denver, Colo. One of the features of this pump is a plastic lining of Haveg material. The unique construction employed in the manufacture of this pump affords a method of fabrication in which no metal comes in contact with the solution which is being pumped. In addition, there are no rubbing contacts between the Haveg impeller and the lining of the pump casing. The illustration shows the pump disassembled, exposing the Haveg lining and the Haveg impeller.

(See February, 1942, issue.)



A Portable Wheelabrator for the blast room—a new development in the field of airless abrasive blast cleaning—was announced by American Foundry Equipment Co., 555 S. Byrkit St., Mishawaka, Ind. Being airless, the unit eliminates such equipment as air compressor motors, pressure tanks, mixing chambers, air receivers, piping, hose, valves, and nozzles. It is claimed that the Portable Wheelabrator has been successfully applied to the cleaning of a wide range of large and small intricate, irregular shaped work such as that handled in jobbing shops or where the daily production of various parts does not warrant the use of special equipment. Typical applications include such work as lathe beds, flywheels, gears, pulleys, valves, car wheels, frames, housings, and so on.

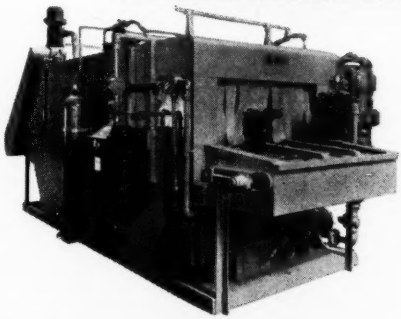
(See August, 1942, issue.)



Especially adapted for extreme service locations, such as steel mills, foundries, chemical plants, or wherever acid fumes, dust, smoke or excessive moisture is present, a vapor-tight Millite luminaire for incandescent or mercury lamps was developed by the Westinghouse Lighting Division, Cleveland, Ohio. Because of its weatherproof construction, the unit can be used satisfactorily for outdoor applications. Consisting of three parts—a porcelain enameled steel reflector available in several sizes, a socket assembly, and a hinged glass cover—the unit is arranged for conduit mounting.

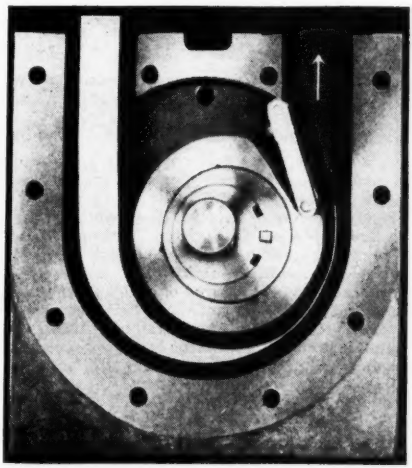
(See August, 1942, issue.)

CLEANING



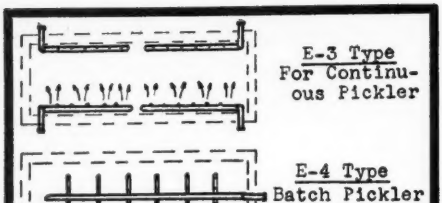
The illustration presents the Industrial "Tear Down" Washer which was designed for use in airplane plants for the washing of engines after "tear down." Every part of the engine passes through the machine and is cleaned and dried. The washer was introduced by Industrial Washing Machine Corporation, 291 Burnet St., New Brunswick, New Jersey.

(See November, 1942, issue.)



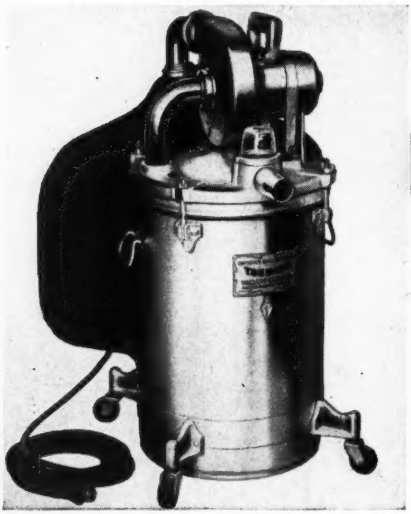
A squeegee type pump was placed on the market by the Downingtown Manufacturing Co., Huber Pump Division, Downingtown, Pa. The Downingtown-Huber Pump operates on a new squeegee principle which is unlike a centrifugal, rotary, reciprocating, screw, or diaphragm pump. Briefly, it consists of a flexible rubber tube which is alternately squeezed and released in a rocking, squeegee manner so that the liquid or gas is actually breathed into and out of the tube. The liquid or gas being pumped is totally enclosed within the tube from the time it enters the pump until it leaves; thus it cannot come in contact with any metal part of the pump.

(See February, 1942, issue.)



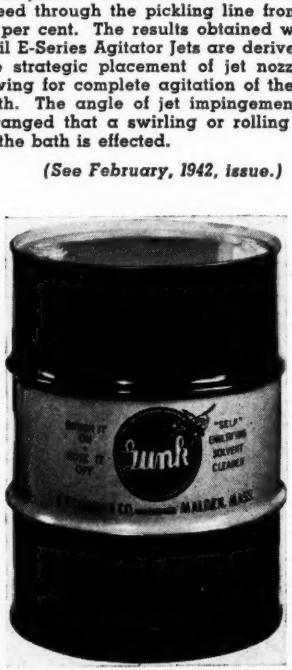
A cold process of metal cleaning in which a compound known as "Gunk X-11" is used was placed on the market by the Curran Corporation, 6 Pleasant St., Malden, Mass. Gunk X-11 is a new mineral grease and dirt digestive solvent. It is available in the form of a concentrate which may be diluted with a grease solvent before use to charge large open cleaning tanks. Gunk X-11 is said to be particularly applicable for use where there is much insoluble dirt or smut to be removed. The cleaning method prescribed for use with Gunk X-11 may be carried out by cold immersion of greasy or dirty parts.

(See March, 1942, issue.)



The desire to increase production of steel for defense with the available facilities in the pickling room has placed particular emphasis on the new E-Series of Heil Steam-Air Agitator Jets used in pickling tanks and manufactured by Heil and Company, 3088 W. 106th St., Cleveland, Ohio. Already installed in many continuous sheet mills, these jets are said to increase the tonnage speed through the pickling line from 20 to 40 per cent. The results obtained with the Heil E-Series Agitator Jets are derived from the strategic placement of jet nozzles allowing for complete agitation of the entire bath. The angle of jet impingement is so arranged that a swirling or rolling action of the bath is effected.

(See February, 1942, issue.)



To meet the need for a portable, powerful vacuum cleaning unit for production-line cleaning, Breuer Electric Mfg. Co., 5100 N. Ravenswood Ave., Chicago, Ill., developed the "Tornado" Model 117 Hi-cycle Vacuum Cleaner shown herewith. Besides being light of weight and readily portable, the unit is said to have the added features of high speed operation and durability and is especially suited for continuous heavy duty cleaning. The high rate of speed at which the cleaner operates develops additional suction strength required for picking up welding flux, scrap, heavy particles of dust or dirt, water, and other materials or debris.

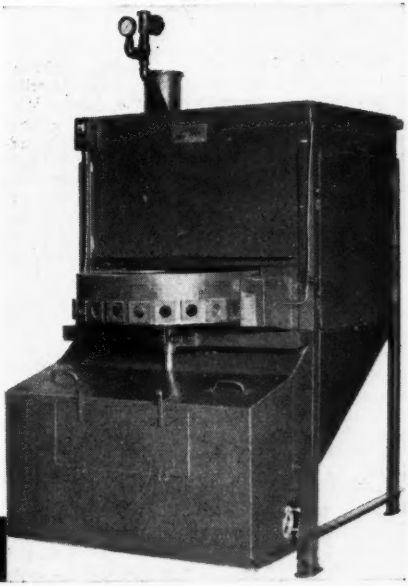
(See July, 1942, issue.)

Alcofoam, a development to safeguard the rapidly expanding alcohol industry against fire, was placed on the market by American-LaFrance-Foamite Corporation, Elmira, N. Y. Produced from Alcofoam powder, it forms a smothering blanket that snuffs out flames in alcohols, ketones, esters, ethers, and other such flammable liquids. It is also said to be dependably effective on petroleum fires. Poured into any single powder generator, and carried through a water stream, Alcofoam powder generates a foam which floats on the lightest liquid surface. Applied at time of fire through fixed connections on storage tanks, or directed through hose and nozzle, it is said to cut off completely the supply of oxygen necessary to support combustion. Alcofoam forms an air-tight, heat-resisting, tenacious blanket made up of millions of minute, tough, durable bubbles containing carbon dioxide gas. It is said to stay in place despite fire draft, preventing re-ignition or reflash. It coats and insulates any burning surface, liquid or solid, vertical or horizontal, according to the manufacturer, and is approved by both Underwriters' and Factory Mutual Laboratories.

(See December, 1942, Issue.)

An automatic, compact sandblast machine designed to process a large quantity of work in a minimum of time was developed by Leiman Bros., Inc., 111-4 Christie St., Newark, N. J. Although designed especially for the sandblast cleaning of shells, the machine can also be used for a wide variety of work. The unit is equipped with a rotary table on which the work is held for processing. The table extends into the interior of the machine so that the parts on one side of the table can be processed while the other side, being outside the machine, is being reloaded.

(See June, 1942, issue.)



A wetting and emulsifying agent, known as "Dresinate," for use in conjunction with all types of alkaline metal cleaners was developed by the research department of Hercules Powder Company, Delaware Trust Bldg., Wilmington, Delaware. The penetrant was suggested for use in conjunction with trisodium phosphate, sodium metasilicate, caustic soda, soda ash, borax, and other alkaline detergents. Its use is indicated for cleaning metal prior to rustproofing, lacquering, painting, or plating.

(See July, 1942, issue.)

A new use was found for steel wool. Previously, the use of steel wool had been considered a hand operation. After much study in defense plants, American Steel Wool Mfg. Co., Inc., 42-24 Orchard St., Long Island City, N. Y., produced a spindle made from Type A Ribbon American Steel Wool. One of the most vital uses for Type A American Steel Wool in ribbon form is the removing of burrs from all non-ferrous metals. This spindle is a very simple tool to make. Type A Ribbon Steel Wool is wrapped around a small shaft and then the completed shaft or spindle is mounted in a chuck. It is then ready for use. According to the manufacturer, it is possible to clear burrs from three sides and two edges in one operation. This application of Type A American Steel Wool in ribbon form is said to have reduced considerably the time required for removing burrs from non-ferrous metals.

(See July, 1942, issue.)

The Roberts Rouge Company, 904 Longbrook Ave., Stratford, Conn., developed a burring compound in cooperation with the Osborn Mfg. Co., prominent brush manufacturer. The Roberts Burring Compound was designed to adhere to wire ends of wheels and thereby provide better and speedier burring methods. The Roberts method of burring is said to be a decided innovation and a distinct addition to the war effort, since it eliminates in many cases slower and less accurate methods which involve hand filing and grinding.

(See August, 1942, issue.)

Formax Greaseless Compounds placed on the market by Formax Mfg. Co., 3999 18th St., Detroit, Mich., are formulated primarily from an animal-hide glue base, into which artificial abrasive grain is mixed. Softening agents are added to keep the material in a usable form. When applied to a revolving buffing wheel, the heat created causes the compound to melt and thus deposit a coating on the wheel. This coating immediately sets and dries, forming a dry, flexible polishing wheel. Formax Greaseless Compounds are said to leave work clean and dry and no further cleaning operations are necessary after use. It is available in all grain sizes. No. 120 or No. 150 grades are recommended for general burring purposes.

(See October, 1942, issue.)

A metal cleaning detergent composition designed specifically for the removal of oil and grease from metal surfaces using a water emulsion and known as "Macosol" was placed on the market by MacDermid, Inc., Huntington Ave., Waterbury, Conn. "Macosol" is said to be entirely neutral in character and thus may be used on aluminum or magnesium without attack on these metals. For use where the parts have to be brushed in the cleaner to remove the dirt it may be operated cold or at a temperature up to about 115 deg. F. According to the manufacturer, Macosol has no harmful effect on the hands and rubber gloves are not required.

(See April, 1942, issue.)

A new cleaner for aluminum and magnesium was developed by the Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturer of electroplating equipment and supplies. This cleaner was given the name of "Matawan AL." It is said to be especially suitable for cleaning parts. Matawan AL cleaner is designed for cleaning aluminum in either sheets or castings. It may be used for magnesium under the same conditions. This cleaner used at 175 deg. F. will etch the work slightly and slowly; thus, as the temperature is increased, the cleaning rate is increased, but at the expense of etching. It is not to be used as an electric cleaner, it is strictly a soak cleaner. To avoid etching, the temperature must be limited to 160 deg. F. At 175 deg. F. or higher for faster cleaning some etching will take place.

(See April, 1942, issue.)

A flexible metal hose of greatly improved seamless corrugated construction was made available by the Eclipse Aviation Division of the Bendix Aviation Corp., Philadelphia, Pa. The hose, which is available in a large variety of special alloys, is said to be practically indispensable in the building of modern transport, fighter, and bomber airplanes, tanks, submarines, and so on, as well as in various industrial applications. The flexibility of the hose is derived from the movement in the side walls of each corrugation. The greater the number of side walls the greater the degree of flexibility. However, the hose cannot be straightened out to its original form and bent again repeatedly without stressing the metal beyond its elastic limit.

(See March, 1942, issue.)

ACP Products and Processes

"Go to a Soldier's Head"

Millions of steel helmets owe the durability of their protective coating to DEOXIDINE. This acid-cleaner that made the all-steel automobile body possible removes oil and rust, eradicates rust-producers, and leaves an etched, passive surface that holds paint perfectly. It not only improves paint life, but simplifies processing.

DEOXIDINE not only serves in quantity production of helmets... numerous applications on many war products are being found every day in the treatment of steel, aluminum and dural for painting.

ACP Products and Processes . . . proved for more than 25 years . . . are helping Industry convert to production of many vital tools of war.

The following list is only an indication of the operations in which ACP can aid you:
RODINE—pickling inhibitor that saves steel and acid, prevents acid fumes and embrittlement. CUPRODINE—provides dense, bright copper coatings on steel by simple immersion (non-electrolytic). LITHOFORM—coats galvanized iron to hold paint. FLOSOL—an exceptional soldering flux for steel, brass, copper, tin, terne plate, zinc and galvanized iron. KEMICK—paint that holds to and protects metal surfaces subject to red heat.

With this as an indication, why not bring your problems of metal cleaning, treating and finishing to ACP?

AMERICAN CHEMICAL PAINT CO.

MAIN OFFICE AND WORKS
AMBLER . . . PENNA.

ACP

CHEMICALS ACP PROCESSES

DETROIT, MICH., 6335 Palmer Ave., E.
CANADIAN BRANCH
WALKERVILLE . . . ONT

A hand wiping safety solvent to be substituted for naphtha, gasoline, or kerosene, to be known as Gunk XP-92, was announced by the Research and Development Laboratory of the Curran Corporation, 6 Pleasant St., Malden, Mass. According to the manufacturer, Gunk XP-92 is also applicable for wide industrial use as a naphtha substitute for grease cleaning and hand wiping operations in ordnance factories or shell plants. This material is described as a unique safety solvent due to the fact that it does not de-oil the skin, has no toxic vapors, has no flash or fire point, and leaves an invisible rust preventive film so thin it cannot be detected.

(See July, 1942, issue.)

Specially designed to meet war demands for faster cycles in anodic degreasing or reverse current cleaning of cold rolled steel parts before finishing, an alkaline type material was placed on the market by the Technical Research Laboratories of Oakite Products, Inc., 20 Thames St., New York City. Known as Oakite Composition No. 90, this new material is reported to provide several original, exclusive features which mark it a basic contribution to faster production, more uniform results, low unit cost and long solution life. Due to its high conductivity, ready adaptability to hard water conditions, effective smut-removing properties and fast wetting-out action, the material is said to remove oil, grease, smut, polishing and buffing compounds on the consistently thorough, speedy basis required where a large, fast, effective soil removal is essential. The material, it is claimed, has been found particularly advantageous to plating departments and contract finishing shops using the Bullard-Dunn Process for the tin coating of steel parts.

(See July, 1942, issue.)

For metals, ferrous and non-ferrous, as well as many other materials, Cyclodiene Hydrocarbon was recommended by Technical Processes Division of Colonial Alloys Company, East Somerset and Trenton Ave., Philadelphia, Pa., as a high speed solvent cleaner. The work is dipped in open wood or steel tanks in which the solvent is kept at room temperature — the work comes out thoroughly degreased and a rust inhibitive thin protective film remains on the work for about 20 minutes before complete evaporation. It is claimed that high-speed evaporation can be accomplished by dipping into hot water or "Methanated Hydrocarbon" which operates about as fast as carbon tetrachloride. According to the standards of the Bureau of Explosives, it is claimed that Cyclodiene Hydrocarbon is considered non-flammable and non-explosive, as well as non-corrosive and rust inhibitive. It is further claimed that re-distillation yields not less than 90 per cent recovery at 375 to 410 deg. F. Vaporization at room temperature is normal and not excessive.

(See December, 1942, issue.)

Built to specification, an industrial parts washer was placed on the market by The Heil Company, 3004 W. Montana St., Milwaukee, Wis., which was said to incorporate multi-washing and drying compartments. This machine can be used for removing oil, grease, dirt and chips from machined and other manufactured products. The Heil Industrial Parts Washer can be adapted to handle almost any type of industrial parts. Parts may be handled on Monorail or flat table-top type conveyors which may have push button start-and-stop operation, as well as variable speed controls. Multiple nozzles, of a type best adapted to products handled, are said to spray all sides of the part, thus assuring absolute removal of dirt, grease and grime.

(See October, 1942, issue.)

An improved form porcelain renew, known as Jo-Lar, was placed on the market by Johnson Products Company, 507 Fifth Ave., New York City. For centuries the basic formula of this material was used in China for repairing their famous porcelains. For 20 years it was produced by Captain John Larson of Chicago under the name of Grip Enamel Cement. According to the manufacturer, it may be used to conceal chips, cracks, or scratches or to permanently repair anything of porcelain, china, glass, plastic, enamel, ceramic, or vitreous ware. Jo-Lar Porcelain Renew is said to conceal the damage and bond permanently with the base in a perfect porcelain finish. According to the manufacturer, it is a pure Frigidaire white and it stays white. It is said to be waterproof, alcohol proof, gasoline proof, and acid proof, and will not crack, craze, check, or shrink.

(See December, 1942, issue.)

"Roxite" is the trade name of the new line of cement-asbestos pipe placed on the market by The United States Stoneware Company, Akron, Ohio. "Roxite" is manufactured by a patented high pressure process, giving it high density and great mechanical strength. Standard Roxite Pipe is specially designed for handling of a wide range of mildly corrosive solutions, for transporting processing water which must be kept free of metallic contamination, and so on. Standard pipe lengths are easily cut in the field to any desired size with a simple abrasive saw arrangement. All Roxite Pipe, when de-aired, is satisfactory for working pressures up to 150 lbs. per sq. inch.

(See August, 1942, issue.)

A cement for use in the quick patching of cracks, ruts, and shallow holes in concrete floors, known as Smooth-On No. 7B Quick Patch Cement, was placed on the market by Smooth-On Mfg. Co., Dept. 437, 570 Comunipaw Ave., Jersey City, N. J. The material is said to harden quickly and adhere firmly to the surfaces to which it is applied.

(See June, 1942, issue.)

A rust-proofing and metal cleaning solution known as "Ruscat" was developed by the Research Laboratories of The United States Stoneware Co., Akron, Ohio. The principal use for this material is in cleaning and preparation of metal surfaces before the application of corrosion resistant paints and coatings and also for the purpose of preventing further rust formation. Ruscat may be applied by brushing or dipping. After a few minutes, the solution may be wiped off and the surface permitted to dry. Another use for Ruscat is to facilitate the handling of iron and steel after long exposure, storage, and handling, prior to use for fabrication, and so on.

(See March, 1942, issue.)

The Milburn Co., 905 Henry St., Detroit, Mich., placed on the market a rust prevention material in the form of a cream which can be applied to the hands of a workman before contact with highly polished metal surfaces. The material, known as "Ply-Rustex," was designed to eliminate perspiration corrosion and other forms of rusting caused by the handling of metals during machining and processing operations.

(See March, 1942, issue.)

A solvent emulsion-type metal cleaner to be known as "Lixol" was placed on the market by Cowles Detergent Company, 7016 Euclid Ave., Cleveland, Ohio. This cleaner is said to be suitable for use on all kinds of metal. Metals cleaned in this material are coated with an invisible oil film which is said to be ideal for painting or shop storage. Lixol produces physically clean surfaces and, according to the manufacturer, can be used alone or diluted with water or kerosene.

(See June, 1942, issue.)

Again putting to practical use its comparatively recent research on electrically conductive rubber and synthetic rubber compounds, The B. F. Goodrich Company, Akron, Ohio, announced a new sandblast hose employing these principles. The new hose was designated as "B.F.G." There is no wire used in the new B.F.G. sandblast hose. The rubber compound used carries away the static electricity as fast as it forms. Laboratory tests made on conventional sandblast hose of excellent make and quality showed that the rubber compounds used in them had a resistance exceeding one quadrillion ohms per centimeter cube, while the resistance of the compound used in the new B. F. Goodrich hose is only 3,000 ohms per centimeter cube. Goodrich Anti-Static Sandblast Hose is made in four-ply construction, with ¼-in. tube, in sizes ranging from ¾ in. to three inches.

(See July, 1942, issue.)

An aluminum cleaning compound known as Alkalume was placed on the market by Northwest Chemical Co., 6529 Russell St., Detroit, Mich. Oil, grease, drawing compounds, and polishing materials are said to be removed quickly and safely from aluminum surfaces by means of Alkalume. This material is supplied in powdered form. When mixed with water, the Alkalume dissolves freely and the recommended proportion is 2 to 12 oz. of Alkalume for each gallon of water. The recommended operating temperature is 170 to 212 deg. F. According to the manufacturer, Alkalume does not attack aluminum surfaces and leaves no deposit upon the cleaned surface.

(See March, 1942, issue.)

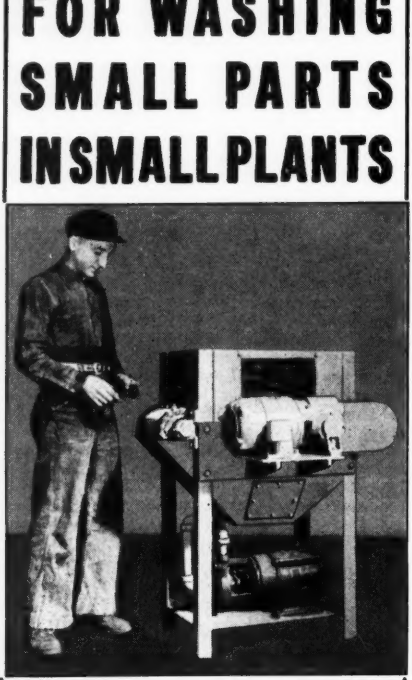
Excess film and dirt caused by heavy, continuous power loads are said to be easily and quickly removed from commutators with a new cleaning stone announced by Ideal Commutator Dresser Company, 1031 Park Ave., Sycamore, Ill. Regular use of the Ideal Commutator Cleaning Stone is said to help in keeping motors and generators on the job 24 hours a day. Only a clean commutator can be expected to function properly. The Ideal Cleaning Stone will also improve brush performance, reduce noise, even distribution of brush contact drop and brush wear, and reduce chattering and sparking.

(See July, 1942, issue.)

Guaranteed to loosen rusted and corroded parts of all and every combination of metals regardless of how badly frozen together, a fast penetrating rust solvent, to be known as Exola, was placed on the market by Patrick-McDermott & Co., 2706 S. Hill St., Los Angeles, Calif. By combining chemically with rust or corrosion, Exola is said to form a metal stearate similar to grease which immediately loosens all metal parts to which it is applied, yet is harmless to the metals themselves.

(See February, 1942, issue.)

FOR WASHING SMALL PARTS IN SMALL PLANTS



This small, compact INDUSTRIAL Washing Machine handles parts from 5/32" in diameter to 6¾" wide x 2¾" high.

The pump delivers a cold solvent solution at a pressure of approximately 25 pounds per sq. in. (A steam injector can be supplied for a heated alkali.)

This machine has a constant speed drive of 32 ft. per minute which gives a capacity of 16 sq. ft. of work per minute. Motors and pumps are mounted on machine.

Write for complete details.

INDUSTRIAL WASHING MACHINE CORP.

291 BURNET ST., NEW BRUNSWICK, N. J.

Designed for use by workers whose hands are exposed to oil, grease, solvents, or paints, a non-medicinal protective cream known as "Pro-Tek" was announced by E. I. du Pont de Nemours & Co., Wilmington, Del. The cream is a greaseless substance which is applied to the hands, arms, and under the nails before starting work. The cream forms an invisible film which provides physical protection against grime and various irritating substances, and, at the end of the working period, can be washed off with soap and running water, thus eliminating the need for strong solvents or harsh abrasives.

(See November, 1942, issue.)

The Hanson-Van Winkle-Munning Company, Matawan, N. J., developed a new type product called Surbrite, a steel surface conditioner. Surbrite is a free-running powder prepared in two types for addition to hydrochloric acid and sulfuric acid pickles. Its use in small quantities as additions to regular acid pickles produces bright, smut-free surface when iron and steel are pickled. (Some, but not all, castings may appear dull, as if over-pickled, which will tend to hide this brightening effect.) The use of Surbrite will reduce acid consumption and metal loss in comparison with pickling practice where plain acid is used. Hydrochloric acid pickles have heretofore proved difficult to control, to avoid smut formation and excessive etching. This is particularly troublesome in many pickling operations just prior to electroplating. Surbrite "H" is simple to use and effectively controls this problem in hydrochloric acid pickles. Sulfuric acid pickles, in general, give less trouble, but the production of bright, smut-free surfaces in addition is a particular feature of Surbrite "S"—the sulfuric acid form of Surbrite. Both forms of Surbrite are fully comparable with the best of existing inhibitors in acid and metal saving. However, the bright surface produced is an outstanding advantage of the Surbrite steel surface conditioner.

(See October, 1942, issue.)

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Air Painting Equipment.—Paasche Airpainting Speeds Production. Paasche Airbrush Company, 1910 Diversey Pkwy., Chicago, Ill., is now issuing an illustrated eight-page booklet covering manual airpainting equipment. The booklet describes salient features of Paasche airbrushes and includes other information on air painting units and accessories which should be of interest to concerns in the finishing field. Copy of Booklet FM9-42 free upon request.

Wheelco Instruments Bulletin. A new six-page bulletin, interpreting the recently amended WPB Conservation Order L-134 as it applies to use of thermocouples and thermocouple protecting tubes for pyrometric instruments, has been issued by Wheelco Instruments Co., Harrison and Peoria Sts., Chicago, Ill.

The bulletin, styled as a supplement to the company's Thermocouple Data Book S2-3, recommends thermocouples and tubes that will serve in place of materials prohibited by the recent WPB order. Recommendations cover thermocouple materials for new installations in temperature ranges where chromium and nickel alloys now are prohibited; substitutions for radiation head target tubes of materials now prohibited; protecting tubes to replace chromium and nickel tubes, now permitted only in a limited number of applications, and recommendations for lead wire to replace chromium and nickel alloy wires of certain gauges now prohibited or restricted.

A convenient chart gives a partial summary of the WPB order and an analysis of various alloys to show materials prohibited or restricted, while the complete text of the order also is reproduced for convenience of instrument users.

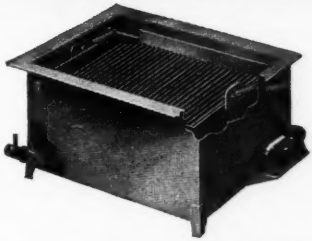
The purpose of the new bulletin is to provide a convenient guide in selection of the most satisfactory thermocouples, thermocouple protecting tubes and lead wire for a given instrument application in line with restrictions placed upon certain critical materials. It supplements the first bulletin ever issued by an instrument manufacturer to list thermocouples by materials, rather than by trade names; to give practical information on construction of thermocouples; to give recommendations on thermocouples, lead wire, protecting tubes, plugs and sockets; information on thermocouple checking; millivolt conversion tables, and other data helpful to an instrument user.

Copy free upon request.

Ingersoll-Rand Coolant and Circulating Pumps. Ingersoll-Rand Company, 11 Broadway, New York City, is now issuing a 20-page catalog covering its complete line of coolant and circulating pumps. Included in the catalog are full descriptions, performance tables, curves, cross-sections, and dimensions. It covers pumps ranging in capacity from 5 to 150 g.p.m. for heads up to 125 feet.

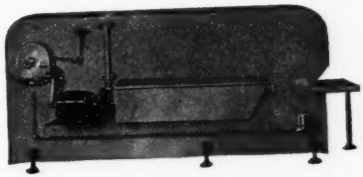
This catalog, known as Bulletin 7074, may be obtained free upon request.

LOW COST EFFICIENT
Metal Parts CLEANING



STURDY-BILT "SIMPLEX" METAL PARTS CLEANER

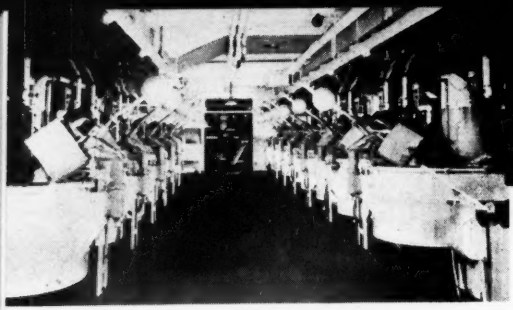
This small, compact, automatic and mechanically simple unit combines the two most positive methods of cleaning Metal Parts, Assemblies, Shells, Cartridges, Castings, Stampings, etc. A swishing action positively removes all grease, oil, dirt and metal chips that have been loosened during the "chemical action" of the "soak." Can be installed in different departments or in a series—one unit for cleaning, another for rinsing or rust prevention coating and others for special requirements. Send for "Simplex" bulletin for complete details.



and for Continuous Production
STURDY-BILT "Soaker-Hydro" METAL PARTS CLEANER

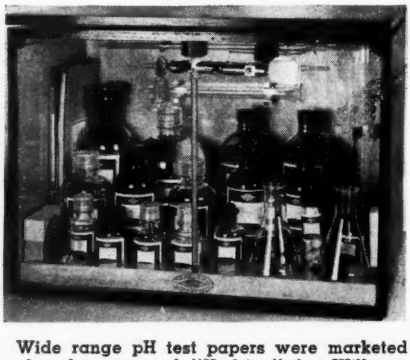
Combines long agitated "soak" with hydro washing action for large production. Parts are loaded onto trays, passed through the soaking tank—then are rinsed to remove oil film and clinging chips—then subjected to a power wash. They are removed dry and ready for use or for the next manufacturing operation. Simplicity is the keynote of construction as well as operation. Send for complete details.

Sturdy-Bilt Equipment Corp.
DEPT. P-1 WEST ALLIS, WIS.



Use of the ordinary watthour meter to provide an accurate and refined control of the current used in electroplating permanent magnets was adopted at the Westinghouse Newark works. The watthour meter is connected to the alternating current side of a rectifier such as used to supply direct current for electroplating. The register for the watthour meter includes a switch device adapted for closure after a predetermined amount of energy has passed through the meter. This switch operates a circuit breaker to open the energizing current circuit and thereby interrupts the plating or charging circuit when the desired plating thickness is attained. No special ampere hour meter or timing device is necessary to obtain accurate electroplating results.

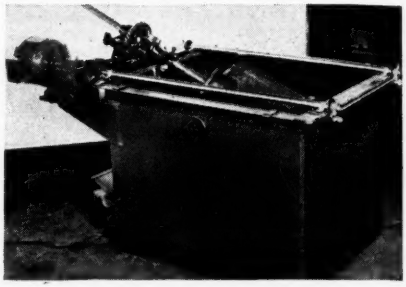
(See June, 1942, issue.)



Wide range pH test papers were marketed under the name of "Hydrion" by Wilkens-Anderson Company, 111 N. Canal St., Chicago, Ill. Hydrion wide range pH test papers are available in a new convenient dispenser. Types A and B regularly furnished show a distinct color change for each pH unit from pH 1 to pH 11, according to the color charts accompanying the dispenser. The dispenser makes it unnecessary to open and close the container; a piece of paper can easily be pulled out and torn off to the desired length.

(See April, 1942, issue.)

An oblique plating barrel drive was developed by the Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturer of electroplating equipment and supplies. Known as the 34 oblique barrel, it is available in a new model, directly driven by a 1/6 h.p. motorized worm gear reducer which is suitably mounted on the tank,

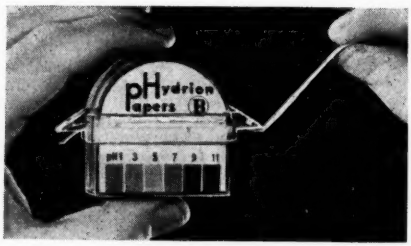


ready for connection to the user's power lines. The arrangement readily permits the removal of the cylinder for rinsing, loading, and unloading of the work. The barrel can be furnished with a wooden tank, asphalt lined, or with a steel tank, unlined or lined with 3/16-in. vulcanized rubber.

(See February, 1942, issue.)

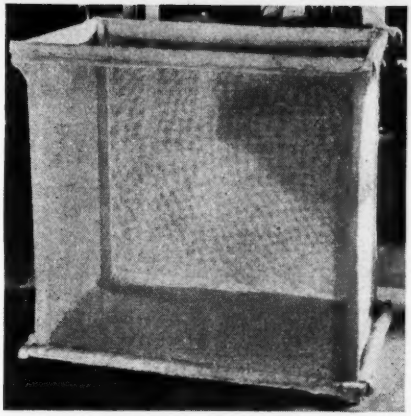
To meet the need for more complete tests in the plating room, the LaMotte Research Department of the LaMotte Chemical Products Company, Towson, Baltimore, Md., introduced an outfit which will enable the operator to make the following control tests: acidity and alkalinity (pH) of all types of baths, chlorides, nickel content, ferrous iron, acid copper, cyanide copper, acid zinc, cyanide zinc, cadmium, brass, and bronze solutions. All necessary equipment for making each test, together with instructions, is included in a handy case.

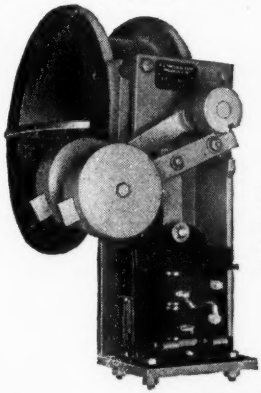
(See September, 1942, issue.)



An aid to good electroplating practice was developed by Hanson-Van Winkle-Munning Company, Matawan, N. J., in the form of HVWM Tank Net. The net is placed in plating tanks so that any work dropped may fall into the net; thus any work dropped is easily recovered by simply lifting the net out of the solution. The net can be used in nickel, cyanide copper, Mazic zinc, acid zinc and cadmium solution to advantage. It is not suitable for alkaline cleaners or sodium stannate tin solutions.

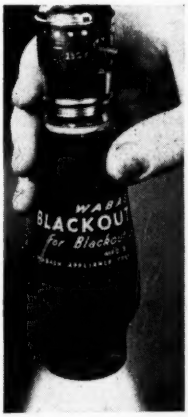
(See February, 1942, issue.)





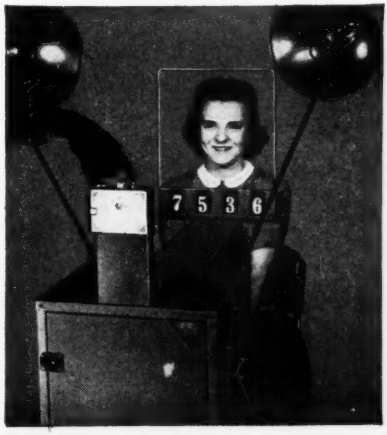
A recent application of the butterfly valve for emergency duty was announced by R-S Products Corporation, 4530 Germantown Ave., Philadelphia, Pa. This solenoid-operated valve provides two-position control—either automatic opening or wedge-tight shut-off in case the electric power fails or is turned off due to any war emergency.

(See July, 1942, issue.)



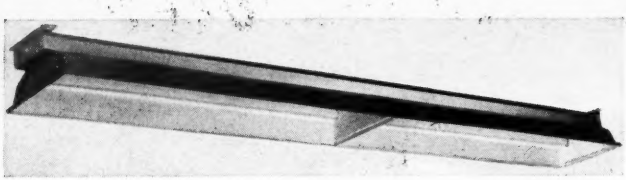
Important changes in Blackout bulb specifications were announced by the Wabash Appliance Corporation, 335 Carroll St., Brooklyn, N. Y. The main specification change was from the color of light blue and red to the deep orange recommended by the Office of Civilian Defense. Other changes included smaller size, reduced current consumption, elimination of the former built-in reflector, and improved type coating to prevent light leakage.

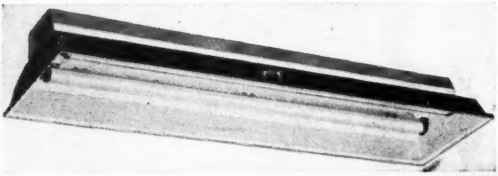
(See August, 1942, issue.)



Designed to photograph up to 250 persons per hour, a compact camera unit for employee identification badge photographs was manufactured by Charles Mayer Studios, Akron, Ohio. The unit includes a camera, two photo flood lights, number container, and cabinet.

(See November, 1942, issue.)



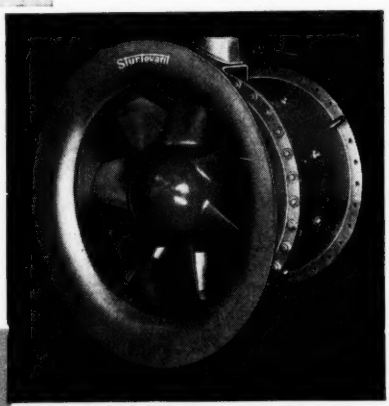


Two fluorescent lighting units were announced by The Miller Co., Meriden, Conn.—The Ivanhoe "Masterlite" for general and localized industrial illumination and the Miller "50 Foot Candler" which is said to be the first 50 foot candle RLM continuous fluorescent lighting unit for general illumination. Both units incorporate the Miller construction features of easy installation, wiring simplicity, and convenience of maintenance and cleaning.

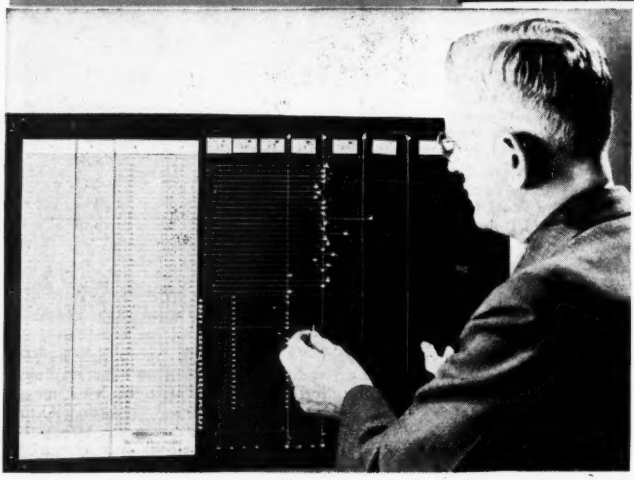
(See November, 1942, issue.)

The illustration presents the "Victory Axiflo Fan," an innovation in axialflow fan design introduced by B. F. Sturtevant Co., 16 Damon St., Hyde Park, Boston, Mass. The fan is said to possess outstanding features in performance, quiet operation, and savings in weight, space and power. For the duration of the war the use of the Victory Axiflo Fan must be restricted to the U. S. Navy, where it is used for heating, ventilating and mechanical draft service on battleships, cruisers, destroyers, and airplane carriers. At the conclusion of the emergency, it will be available to industry.

(See August, 1942, issue.)



PLATING



Shown here is an ingenious device designed to provide production and purchasing executives with a quick means for observing all facts concerning raw materials, parts, assemblies, machines and man-hours. The device, which is known as the "Produc-Trol," was developed by the Wassell Organization, Westport, Conn. Produc-Trol units are available in sizes to fit specific needs.

(See August, 1942, issue.)

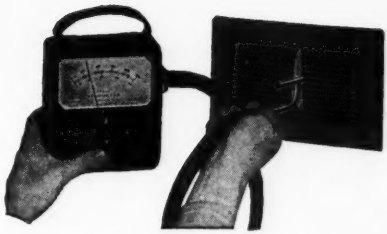
PLATING

Illinois Testing Laboratories, Inc., 420 N. LaSalle St., Chicago, Ill., offered an air intake or exhaust grille jet designed for use with its "Alnor" Velometer (air velocity meter). The jet is available in two sizes—low velocity of ⅝-in. O.D. tubing for full scale ranges of 0 to 1,000 f.p.m., and high velocity of ⅜-in. O.D. tubing for scale ranges of 0 to 2,500 f.p.m. and higher.

(See March, 1942, issue.)

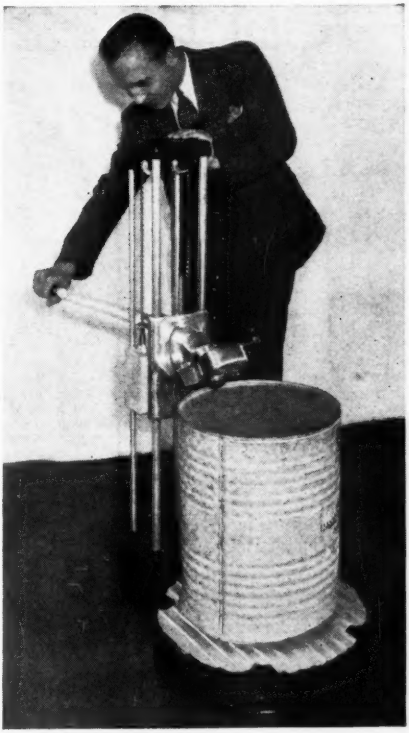
A semi-automatic drum opener of simple construction, known as the "Westco," was announced by The Turner & Seymour Mfg. Co., Lawton St., Torrington, Conn. Easily and quickly operated, the unit is designed to eliminate injuries associated with the usual hammer and cold chisel method of opening drums. The Westco is designed to cut a smooth-edged opening in straight-chime metal drums up to 35 in. in height. The corrugated cast iron base of the opener can be bolted to the floor. Four steel uprights support the cutting unit, which is counerbalanced for easy adjustment to the height of drum. After adjustment, the cutting unit is locked in position. By closing the cuting unit lever, the drum is perforated.

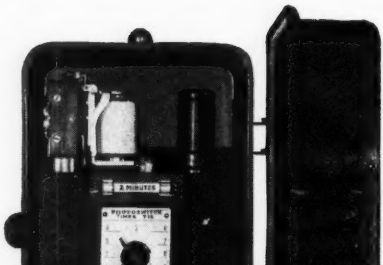
(See June, 1942, issue.)



A recent development in the line of fluorescent lamps manufactured by Sunray Electric, Inc., Warren, Pa., is shown in the accompanying illustration. Designated as the Sunray Fluorescent Lamp, the unit is said to be the smallest of the standard type fluorescent lamps commercially available. The lamp offers the advantage of flexibility in lighting applications, and is especially adaptable where a close source of glare-free light is required.

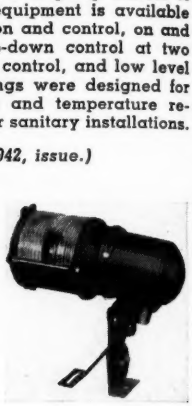
(See February, 1942, issue.)





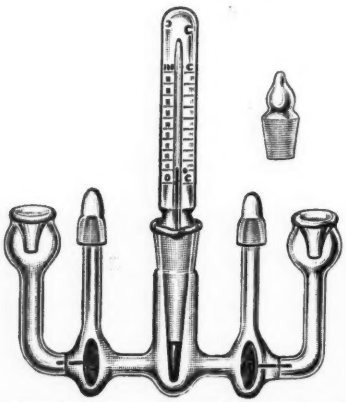
A liquid level control to be known as Photoswitch Level Control Series P16 was placed on the market by Photoswitch Incorporated, 21 Chestnut St., Cambridge, Mass. The control provides on and off valve or pump control of any liquid. Complete equipment is available for single level indication and control, on and off pump-up and pump-down control at two levels, boiler feedwater control, and low level safeguards. Probe fittings were designed for high and low pressure and temperature requirements as well as for sanitary installations.

(See June, 1942, issue.)



For lighting industrial fences and areas for protection against sabotage, Fresnel Luminaires were announced by the Westinghouse Lighting Division, Westinghouse Electric & Mfg. Co., Cleveland, Ohio. Two types are available—SF-180 and MF-180 for series and multiple circuits respectively.

(See July, 1942, issue.)



An illuminated magnifier which can be plugged into any standard 110-volt circuit, known as the "Magni-Ray," was placed on the market by the George Scherr Co., 130 Lafayette St., New York, N. Y. The magnifier has an unusually wide magnification field and provides scientifically correct lighting directly on the object in the field, thus shutting off reflections.

(See April, 1942, issue.)

For accurate determination of conductivity of electrolytes of high conductivity, the Cel-3 Fill-Type Conductivity Cell with a constant of approximately 15 was made available by Industrial Instruments, Inc., 156 Culver Ave., Jersey City, New Jersey.

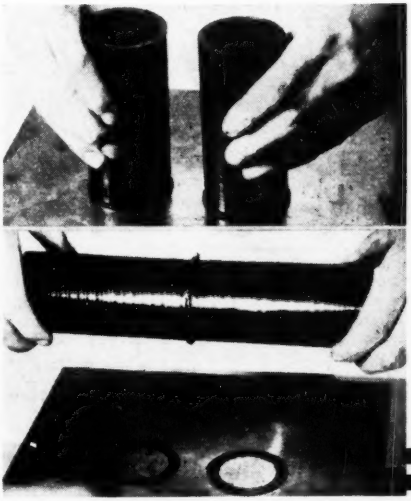
(See August, 1942, issue.)

The Enthone Co., 442 Elm St., New Haven, Conn., announced the development of a process called Ebonol "C" for simple, direct, low temperature, chemical blackening of copper and copper alloys. The process involves immersion in a solution of blackening salts operated near the boiling point or from 200 to 212 deg. F. The blackening is accomplished in from 2 to 10 minutes, depending upon the alloy being blackened. The process is said to be suitable for blackening copper, beryllium copper, bronze, phosphor bronze, and brasses with zinc contents of 35 per cent or less. The coating is essentially cupric oxide and, being integral with the base metal, it cannot chip or flake.

(See May, 1942, issue.)

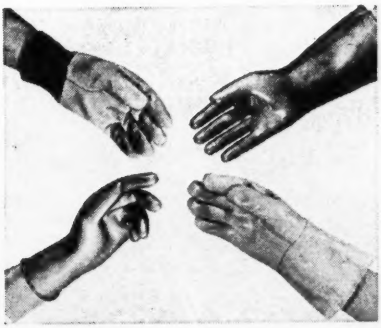
In order that serious hand injuries from caustics, acids, solvents, oils, and so on, can be kept at a minimum, The Surety Rubber Co., Carrollton, Ohio, developed the Sureseal Industrial Glove line. Sureseal Gloves are produced from a new synthetic plastic material that has sufficient elasticity to give ample flexibility and comfortable finger freedom.

(See March, 1942, issue.)



A non-rubber flexible Flamenol Bus-drop Cable for 600-volt branch circuits was introduced by the Wire and Cable Division of the General Electric Co., Schenectady, N. Y. By means of the cable, connection from bus bar to machine can be made readily and economically.

(See July, 1942, issue.)

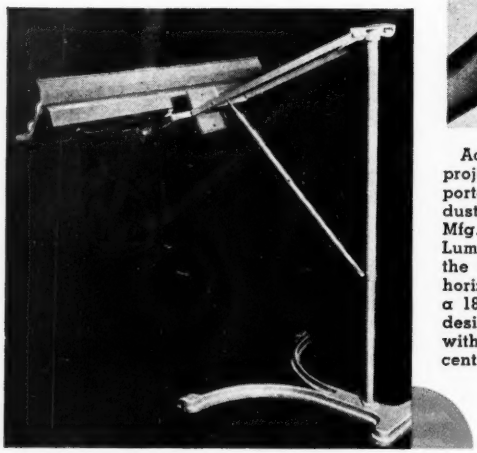


A plastic pipe manufactured in the same dimensions as extra strong steel pipe of 2-in. O.D. or less was announced by The Dow Chemical Company, Midland, Mich., under the trade name of "Saran Pipe." The resistance of this pipe to extreme moisture, chemicals and solvents, coupled with its strength and fatigue life, indicate that it will play a vital role in industry. It is said to be entirely unaffected by water and only a few solvents exhibit any adverse effects on it.

(See October, 1942, issue.)

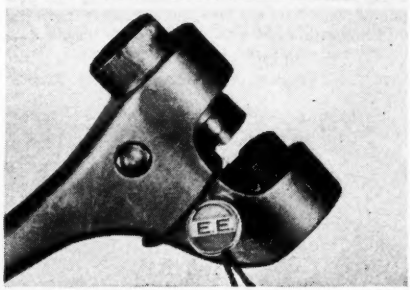
A completely tamperproof safety and inspection seal for sabotage prevention was manufactured by the Stoffel Seals Co., Inc., 188 Water St., New York, N. Y. The seal, which also provides for secret identification markings, is said to guard and fully guarantee against any tampering, alteration, or substitution of parts or products. It consists of two components; namely, a pre-shaped metal seal-cup and individualized identification disc, which is multi-colored printed.

(See September, 1942, issue.)



A photoelectric relay especially designed for turning off protective lighting around plants during blackouts, known as the "Light Watchman," was made available by the General Electric Co., Schenectady, N. Y. The relay, which is available in indoor and outdoor types, is designed for actuation by the nearest street light. Thus, when this light is extinguished at the start of a blackout, the relay turns off the lights in the protective lighting system. When the street light is turned back on, the controlled lights are again energized.

(See October, 1942, issue.)



Adjustable from 2½ to 7 ft. and designed to project light into many inaccessible places, a portable fluorescent service light for use in industrial plants was developed by the Lumidor Mfg. Co., Los Angeles, Calif. Known as the Lumidor Portable Fluorescent Service Light, the unit is adjustable upward or downward, horizontally or vertically, or to any angle in a 180-deg. arc without the use of tools. It is designed to illuminate any darkeded area with a long source of cool, comfortable fluorescent light.

(See October, 1942, issue.)

Known as "Speed-Patch," a material for use in repairing holes, spalls, and work expansion joints in industrial floors, was placed on the market by Rock-Tred Corp., Dept. N, 605 W. Washington Blvd., Chicago, Ill. "Speed-Patch" is a ready-mixed cold plastic material which may be used as taken from the package. For complete resurfacing, it is simply dumped on the floor and rolled out to a smooth, ready-to-use floor. Speed-Patch is said to withstand any weight load and to provide a safe, low traction, permanent floor repair. In addition, the material is said to have a great resistance to oils and greases.

(See June, 1942, issue.)

Two new grades of potassium silicate were announced by the Philadelphia Quartz Company, 121 S. Third St., Philadelphia, Pa. Called Kasil No. 2 and Kasil No. 6, they are specially concentrated solutions, developed primarily for the manufacture of welding rods. One of the most important processes in the welding rod industry is the extrusion method of production which employs potassium silicate of correctly controlled viscosity. Kasil No. 2 is a 32 deg. Baume product with the molecular ratio of 1:3.92 and Kasil No. 6 is 40.5 deg. Baume, molecular ratio 1:3.29. Both grades are offered in steel returnable drums as well as in single trip packages.

(See October, 1942, issue.)

A method for recovering copper by deplating it from iron and steel scrap was announced by the Electroplating Division of E. I. du Pont de Nemours & Co., Wilmington, Delaware. Virtually 100 per cent of the copper, a vital war material, is recovered in a form satisfactory for direct use in electroplating important metal parts for military equipment, the company said. Large quantities of steel strip and iron may be made available for reuse. Many war products are fabricated from copper-coated steel strip. Resulting scrap metal is useless until the copper has been removed.

(See October, 1942, issue.)

A process for multiple production of metal templates was developed by Lockheed Aircraft Corporation, 1705 Victory Place, Burbank, Calif., in connection with aircraft manufacture. The process involves drafting on metal master sheets to produce the original detail layouts, handling of the completed masters through the electrolytic process where the layouts are reproduced in exact duplicate on blank sheets, and final movement of the duplicates to a template department where the layouts are cut out, drilled, and finished for use in the production departments.

(See November, 1942, issue.)

ROLOCK

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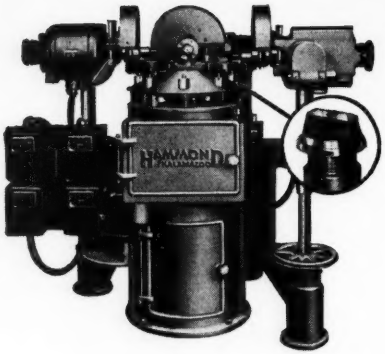


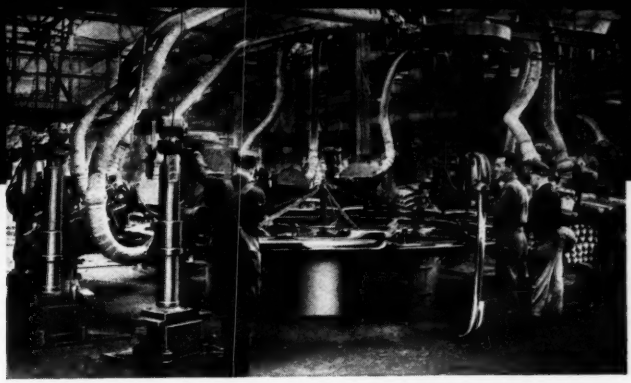
For special defense polishing and buffing jobs, Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich., developed a rotary automatic polishing machine capable of handling a wide variety of circular pieces, including aluminum pistons for aircraft engines, fuse bodies, and engine valves. To change from the polishing or buffing of one piece to another of a different type requires only a simple change of work holders or magnetic chucks. The Hammond "J" Rotary Automatic Polishing Machine is designed for operation by one operator.

(See February, 1942, issue.)

Adaptable to handling many jobs usually done on conventional lathes or similar machines, the foot-operated speed lathe illustrated herewith was placed on the market by the Walker-Turner Co., Inc., 7111 Berckman St., Plainfield, N. J. The lathe is designed for use in polishing, burring, and lapping ferrous and non-ferrous metals and plastics, and will chuck rounds, tubing, and hexagonal shapes up to 2 in. in diameter. The lathe is being used in the aviation industry to polish engine parts such as valves, push rods, bolts, and like parts at a considerable saving in time and material. The machine is equipped with a three-phase motor in direct drive or can be obtained with a gear-driven type motor. It has a speed range from 950 to 7,200 r.p.m. Overall height of the lathe is 42 in., and weights, depending on the motor, are up to 300 pounds.

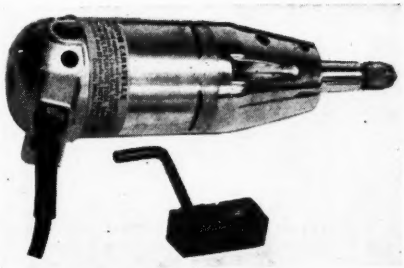
(See March, 1942, issue.)

VICTORY BONDS



Acme Manufacturing Company, 1642 Howard St., Detroit, Mich., developed a bumper finishing machine which is said to reduce both time and cost of processing. The machine is a continuous rotary type—a design that Acme Manufacturing Company has advocated to handle the finishing of curved bumpers efficiently. Inasmuch as the bumper travels in an arc conforming approximately to the radius of the work, the buffing wheel follows the shape naturally and covers the surface by assisting the flexible floating wheel.

(See February, 1942, issue.)



H & H Research Co., 12540 12th St., Detroit, Mich., announced the addition of a rubber-abrasive polisher to its line of portable electric filing and honing tool accessories. The H & H Rubber-Abrasive Polisher can be used to produce and maintain a mirror-like polished finish on dies, molds, and so on. The polisher is available in grits ranging from 80 to 180.

(See July, 1942, issue.)

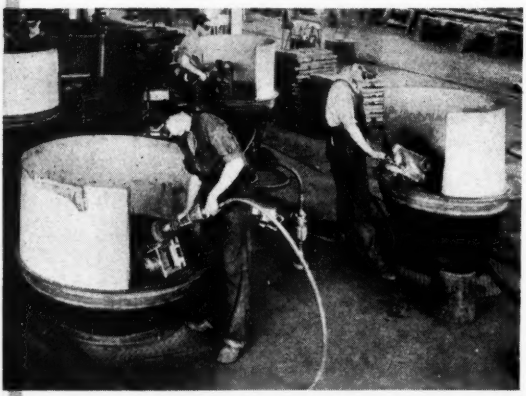
Known as the "Filtaire," a portable dust collector particularly suited for use with grinding and polishing machines where no central dust collecting system is available was introduced by the Edward Blake Co., 634 Commonwealth Ave., Newton Centre, Mass. The motor and fan are located behind a replaceable Dustop filter so that all bearings are protected from dust and grit. The Filtaire is easily portable from one machine to another. The Filtaire is a complete, self-contained unit and can be operated by simply plugging the electrical connection into the nearest 110-volt outlet.

(See July, 1942, issue.)

POLISHING

American Optical Company, Southbridge, Mass., announced a respirator for protection against toxic dusts. Representing an entirely new design in toxic dust respirators, the American R9100-T Respiratory Protector is light in weight and gives full vision, while the entire face piece is itself a filter and compresses maximum protection area into minimum space. The closely felted, laboratory-tested filter has been approved by the U. S. Bureau of Mines for protection against the inhalation of toxic or poisonous dusts.

(See June, 1942, issue.)



The Kirk & Blum Mfg. Co., 2816 Spring Grove Ave., Cincinnati, Ohio, developed the K & B Down Draft Dust Control System shown above. By means of this system, dust is carried off through ducts constructed under the floor, thereby saving floor space.

(See July, 1942, issue.)

Re-design of the Steel-Grip Individual Finger Guard for the thumb and first two fingers into a single unit resulted in the production of the Steel-Grip Triplex Guard shown in the above illustration. The new guard — a product of Industrial Gloves Company, 722 Garfield Blvd., Danville, Ill.—is designed for use where protection is needed only on the thumb and first two fingers.

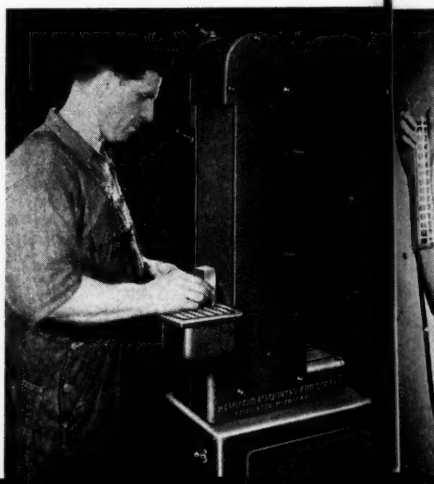
(See August, 1942, issue.)

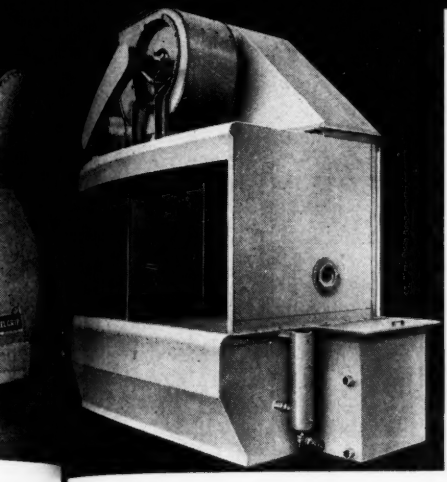
Hammond Machinery Builders, Inc., 1615 Douglas Ave., Kalamazoo, Mich., placed on the market the "600" Dri-N-Wet Abrasive Belt Surfacer for grinding, polishing and surfacing operations. The machine is totally enclosed for safety and is arranged for use with an individual dust collector or for connection to an exhaust system.

(See May, 1942, issue.)

A line of self-contained dust collector units available in three sizes was announced by Hammond Machinery Builders, Inc., 1615 Douglas Ave., Kalamazoo, Mich. The three sizes — designated as the Models 30, 40 and 50—are of a compact functional design, thus requiring a minimum of floor space.

(See June, 1942, issue.)





The above illustration shows the improved Hydro-Whirl Magnesium Dust Collector Booth for use in performing magnesium grinding, buffing, and polishing operations which was marketed by Industrial Sheet Metal Works, 630 E. Forest Ave., Detroit, Mich. The safety factor in this particular booth has been creased over models formerly offered.

(See September, 1942, issue.)

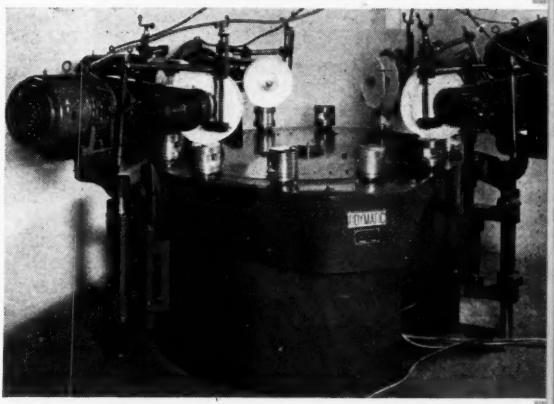
Designed in answer to a request for a small, cool light for close work and inspection in the restricted areas of bomber wings, a fluorescent extension cord light designated as the P-7 was marketed by the Hygrade Sylvania Corp., Lighting Division, Ipswich, Mass. The unit is of rugged, lightweight and compact design.

(See September, 1942, issue.)

POLISHING

To afford adequate eye protection for both men and women workers, a new type of rimless safety spectacle equipped with Tulca lenses made by Tulca Division, The Univis Lens Company, Dayton, Ohio, was introduced. The lenses, which are made of a special material (not glass), are said to be comfortable to wear and light in weight. The light-weight factor, it is claimed, overcomes the tendency of the worker to remove the heavier type of goggle and thus offers continual eye protection throughout the day.

(See March, 1942, issue.)

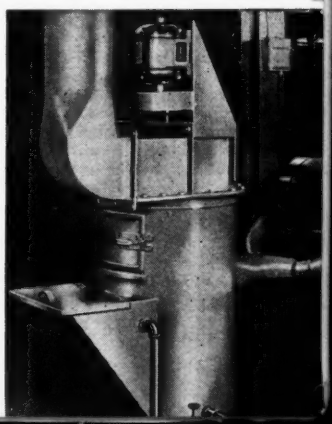


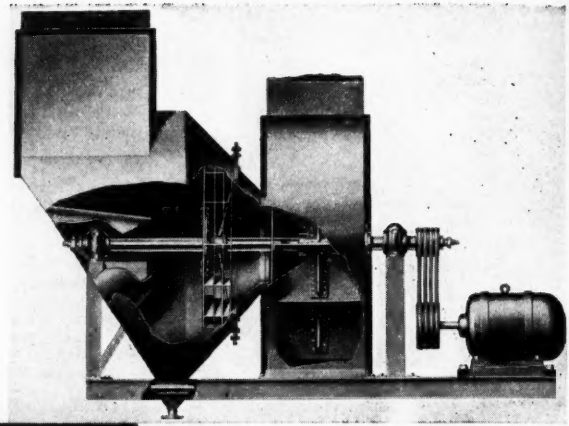
The Udylite Corporation, 1651 E. Grand Blvd., announced the development of an automatic polishing machine for buffing aluminum aircraft engine pistons. The unit shown buffs sides and top of a piston in 15 seconds.

(See April, 1942, issue.)

A water-type dust collector was introduced by the Newcomb-Detroit Co., 5741 Russell St., Detroit, Mich., under the name "Newcomb-Detroit Uni-Wash Dust Collector." It is designed to efficiently remove dirt, dust, lint, grindings, fumes, and vapors from the air, and is particularly adaptable to grinding and polishing operations.

(See March, 1942, issue.)



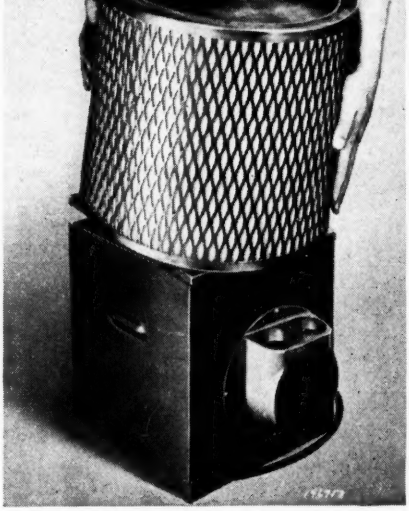


A unit for removing dust and fly ash from flues, kilns and furnaces, smelter stacks, and cupolas, known as the Schneible FiltreFan, was designed by the Claude B. Schneible Co., 3951 Lawrence Ave., Chicago, Ill. The FiltreFan is made in seven sizes to meet any conditions regardless of the size of the stack, kiln, cupola, or other source of fly ash.

(See August, 1942, issue.)

Andel and Company, Inc., 5218 N. Kedzie Ave., Chicago, Ill., placed on the market a line of black-out shade equipment to be known as "Andelco." This type of equipment was created to fill definite demands of black-out requirements. It is claimed that no matter how many foot-candles of illumination are present on the interior of any building, Andelco Black-Out Shades provided over the window will black it out absolutely.

(See March, 1942, issue.)



A cylindrical type filter especially designed to increase the range of uses of its standard Model "600 Dustkop" Self-Contained Dust Collector so that it can be employed to collect dust from the largest types of tool, surface, and similar production grinding operations was announced by the Aget-Detroit Mfg. Co., 935 Book Bldg., Detroit, Mich. The filter is available as a complete unit so that when ordered as a replacement, the flat filter and louvered cover of the "Dustkop" already in use can be discarded and the new filter fitted on without the use of tools.

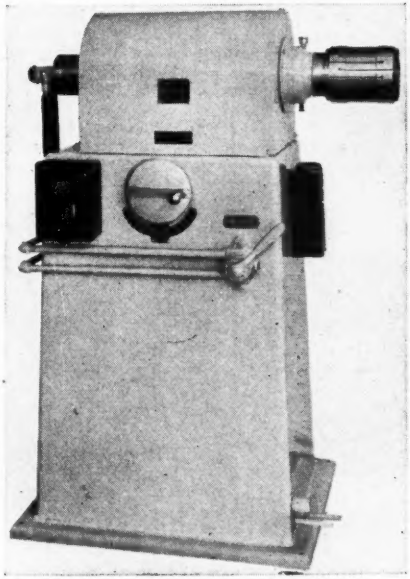
(See September, 1942, issue.)

Chisholm-Moore Hoist Corp., Tonawanda, N. Y., announced the CM "Meteor" Heavy Duty Electric Hoist which is available in capacities of ½ ton and up. Features of the hoist include streamlined design; airplane-type cooling fins that quickly dissipate the heat generated by gears and load brake; fully enclosed, weatherproofed design which permits the Meteor to be used indoors and out; fully enclosed safety-type hook blocks, and specially designed electrical system.

(See April, 1942, issue.)

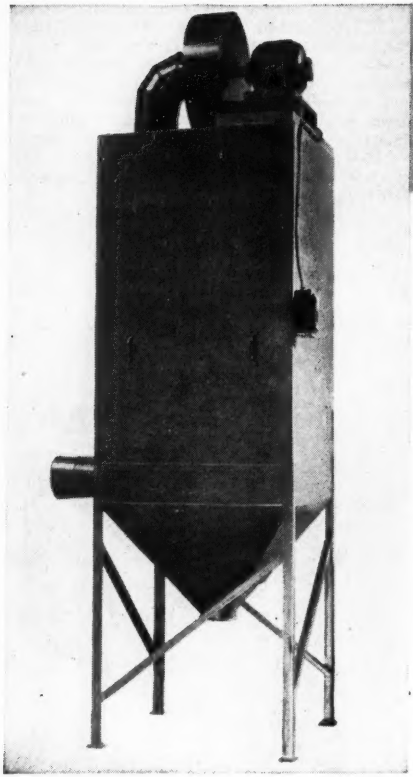
Hammond Machinery Builders, Inc., 1622 Douglas Ave., Kalamazoo, Mich., announced the development of the "OD" Cylindrical Polishing Machine capable of handling ¼ to 9-in. outside diameter cylindrical shapes, rods, and tubes. It is especially adaptable to the use of abrasive belts with back stand attachments, polishing or buffing wheels. The machine is designed to permit an inexperienced operator to secure quality finishes at high production rates.

(See March, 1942, issue.)



Designed especially for polishing and finishing engine barrels on aircraft engines, the variable speed lathe shown here was brought out by Schauer Machine Co., 2060 Reading Rd., Cincinnati, Ohio. The lathe is equipped with an expanding mandrel for holding the work. Any spindle speed desired—from a low of 105 r.p.m. to a high of 1,155 r.p.m.—can be obtained while the lathe is in operation.

(See March, 1942, issue.)



A dust collector especially designed for collecting very fine dust was placed on the market by Leiman Bros., Inc., 121-9 Christie St., Newark, N. J. The collector may be attached to individual machines or groups of machines such as grinders, polishers, sandblast machines, saws, filers, lathes, and any other type of machine or device where dust is created in the course of operation.

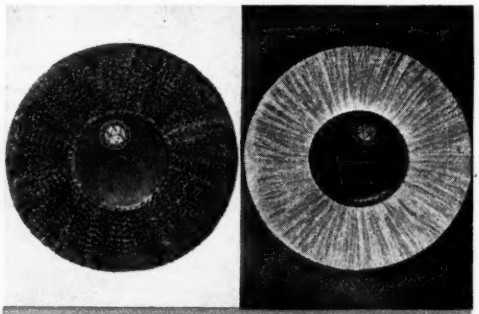
(See October, 1942, issue.)

A work glove designed for women in industry who require a flexible, comfortably fitting, but sturdy and economical general purpose glove was introduced by Industrial Gloves Company, 722 Garfield Blvd., Danville, Ill. Made of lightweight horsehide, the Steel-Grip Woman's Work Glove is said to wear well even on the toughest job, yet remains soft and flexible.

(See September, 1942, issue.)

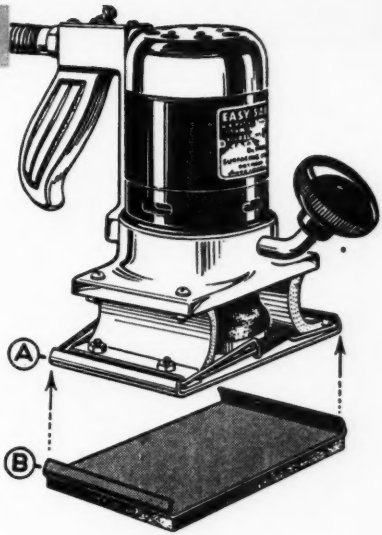
The Hanson-Van Winkle-Munning Co., Matawan, N. J., developed new types of wire brushes and Tampico brushes for cleaning, polishing and finishing metals. The brushes are designated by the trade name "Staplbond." Staplbond Steel Wire Sections are recommended for cleaning, polishing and heavy brushing on steel, brass, and other metals, rubber, gear teeth and castings, and for removing rust, scale, corrosion, dirt and paint. Staplbond Tampico Sections are used by metal finishers for the polishing and buffing operations. Early in the manufacture of these brushes, steel flanges were used, but the steel has been replaced by fibre to conserve metal, reduce shipping weight, and also to place less load on the spindles.

(See September, 1942, issue.)



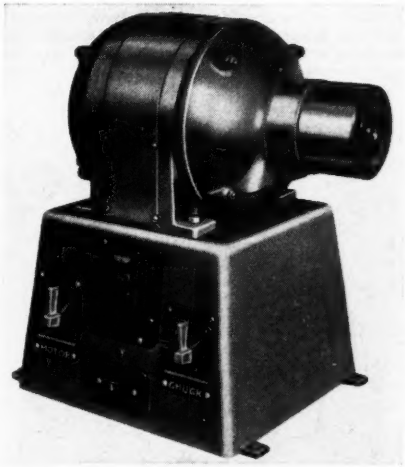
POLISHING

POLISHING



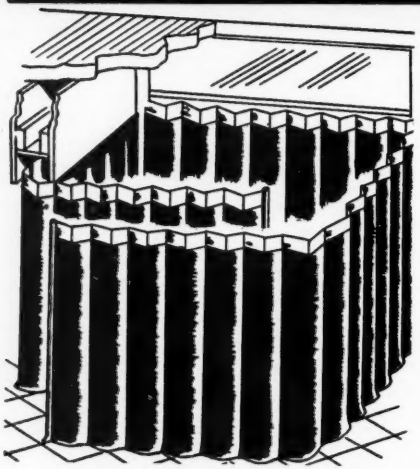
A magnetic polishing lathe for use in handling small steel parts was brought out by The Lima Electric Motor Co., Lima, Ohio. The unit is designed to handle steel parts from 2 to 5 in. in diameter, and the faceplate of the magnetic chuck is interchangeable to accommodate different sizes and shapes of parts. The magnetic chuck is mounted on the motor shaft and has a self-contained d.c. supply. The Lima Magnetic Polishing Lathe is available in motor speeds from 600 to 3,600 r.p.m., with both single and two-speed motors to provide wide speed selection.

(See May, 1942, issue.)



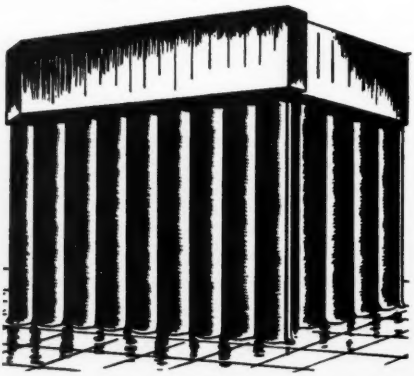
The reciprocating action of the Easy Electric Sanding Machine shown in the above illustration duplicates the back-and-forth motion of hand work. This machine, known as the Model XLD, was manufactured by the Detroit Surfacing Machine Co., 7433 W. Davison, Detroit, Mich. The speed of operation is 3,000 strokes per minute as compared to 150 s.p.m. by hand. The reciprocating action is said to have proved very effective in the production and maintenance of metal airplanes, parts, gliders, propellers, guns, searchlights, and ammunition cases—sanding, rubbing or polishing wet or dry, curved or flat surfaces. Power is furnished by a heavy duty universal electric motor of special design in either 115 or 230-volt models. The unit weighs approximately 7½ pounds.

(See October, 1942, issue.)



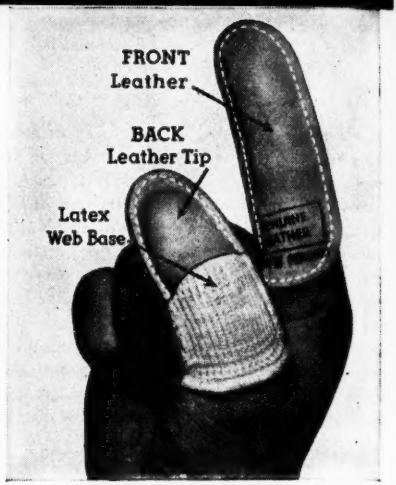
The illustrations above and below present a folding fabric blackout partition for building entrances which was developed by New Castle Products, New Castle, Ind. Designed to conform to blackout standards and at the same time permit easy access to and exit from lighted buildings, the partition works on an accordion-like principle, assuring flexibility.

(See June, 1942, issue.)



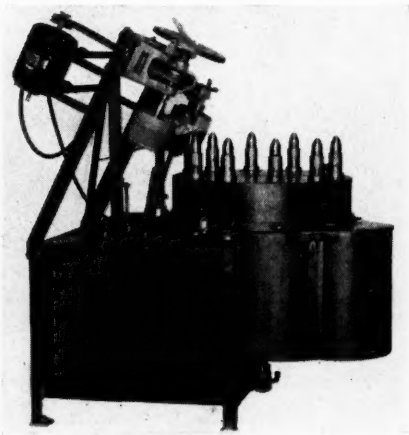
The Leiman Shot Tip Polishing Machine brought out by Leiman Bros., EA-134 Christie St., Newark, N. J., is designed to polish one thousand 37 mm. shot tips per hour. The parts to be polished are held on a number of rotating chucks. The machine occupies a floor space of 38 x 45 in. and is approximately 52 in. high.

(See November, 1942, issue.)



The Steel-Grip Finger Guard No. 14717—product of Industrial Gloves Company, 722 Garfield Blvd., Danville, Ill.—was improved for certain types of punch press work, sanding, burring, grinding, and so on. The new feature of the glove is the added leather section over the back of the finger at the tip end. This construction assures the operator of protection on the back of the finger, or thumb, as well as the front.

(See November, 1942, issue.)

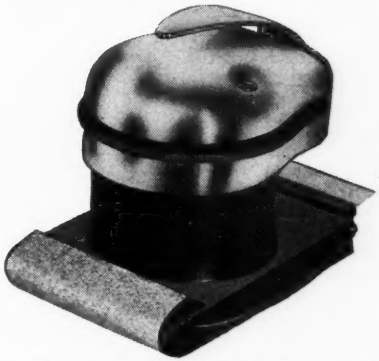


A lightweight eye shield for women workers, known as the "StaSafe," was announced by Standard Safety Equipment Company, 232 W. Ontario St., Chicago, Ill. The shield, in addition to giving eye protection, has a quarter dome head shield made of fibre which provides a certain amount of hair protection for women workers.

(See December, 1942, issue.)

A development in small size block sanders was offered by National Air Sanders, Inc., 21714 W. State St., Rockford, Ill. The new unit, named by "Mity-Midget," is hand size—5½ in. long, 4¼ in. high and weighs only 3½ pounds. Chief feature of the sander is the elimination of vibration.

(See December, 1942, issue.)

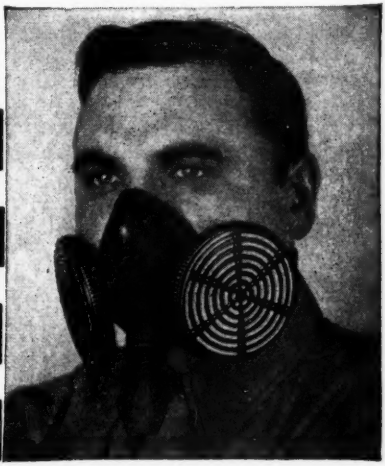


In order to save metal for war production, the M.S.A. Comfo Dust Respirator, product of Mine Safety Appliances Company, Braddock, Thomas and Meade Sts., Pittsburgh, Pa., was redesigned with filter cases of black plastic. Less resistance to air flow and more attractive appearance are features of the device.

(See November, 1942, issue.)

Brushes that look like discs with two square corners and rotate like a spinning coin were produced by the Osborn Manufacturing Company, 5401 Hamilton Ave., Cleveland, Ohio, for use in removing rust, scale, rubber, burrs, sharp corners, dirt and chips from metal holes, cavities and recesses. Known as "Sibot" Brushes, they will clean both the bottoms and side walls in the cavities of various machined, stamped, cast and forged parts in one operation. The brushes are made of wire in two ring-lock sections with a metal shank in between.

(See November, 1942, issue.)



A patented adhesive of tremendous bonding strength for use on polishing wheels, known as "Stikum," was placed on the market by W. H. Long Company, 70 W. Hubbard St., Chicago, Ill. This material is said to have exceptional penetration qualities and remains flexible after application. It is also said to dry quickly and firmly. "Stikum" resists friction heat, burnouts, chunking, and cut-downs. The extra firm grip provided by means of "Stikum" is said to hold the abrasive grains in such a manner as to provide "cutting teeth." "Stikum" is available ready for use and requires no preparation.

(See May, 1942, issue.)

Whiting Corporation, Harvey, Ill., announced the acquisition of the Hydro-Clone line of dust and fume suppression equipment for every type of foundry and industrial application. According to the manufacturer, the Hydro-Clone units effectively suppress dusts and fumes by a simple process of distintegration in which dust and fume laden air mixed with water is subjected to high velocity impact, and the air effectively cleaned without hazard of fire or explosion.

(See June, 1942, issue.)

A polishing disc lubricant known as No. 46 Tallo-Stick was placed on the market by E. Reed Burns Mfg. Co., 40-42 Withers St., Brooklyn, N. Y. When this material is applied sparingly to abrasive discs used on flexible shafts or on disc grinders, it is stated that life of disc is increased from 25 to 33 per cent, metal is not burned or discolored by over-heating, cutting qualities of abrasives are not retarded, and finer, softer and more satin-like finish is obtained. No. 46 Tallo-Stick polishing disc lubricant is supplied in paper cartons 2¾ in. in diameter and 5½ in. long, weighing about one pound.

(See October, 1942, issue.)

A new type of adhesive was developed as a substitute for glue in facing polishing wheels by the Hanson-Van Winkle-Munning Co., Matawan, N. J., manufacturer of electroplating equipment and supplies. This material is called H-VW-M Adhesive. H-VM-M Adhesive is used like glue. Since it is ready to use, it is not necessary to weigh out ingredients or to dissolve and cook beforehand; it may be simply heated and used as soon as warm.

(See November, 1942, issue.)

Be a Ten-Percenter. Now is the time to contribute ten per cent of your income for War Savings Bonds and Stamps.

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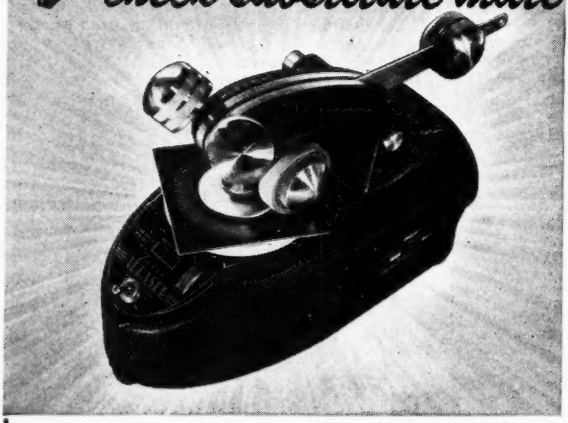
ABRASERS



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DESIGNERS AND BUILDERS OF PRECISION SCIENTIFIC APPARATUS

National Paint Dictionary. The second edition of the National Paint Dictionary, by Jeffrey R. Stewart, is now being issued by Stewart Research Laboratory, 1340 New York Ave., N. W., Washington, D. C. This book is one of the most complete works of its kind now available and is condensed into 224 pages with approximately 200 illustrations and charts. Included in the book are definitions of trade names of raw materials used in the paint and allied industries.

The National Paint Dictionary contains charts, tables, useful information and miscellaneous data. It describes all of the important testing devices and apparatus used in the laboratory, together with illustrations. It is strictly technical, thoroughly authentic and completely unbiased.

Since the second edition is limited, it is important that those wishing copies send orders immediately. The second edition is bound in durable green Fabrikoid, trimmed with red and gold stampings. Orders may be sent directly to Stewart Research Laboratory. The price of the second edition of the National Paint Dictionary is $7.50.

BLACK-MAGIC

"The one-bath process"

The Witch is riding her broom into many a plant bogged down with "rulings" on "contracts."

A BLACK-MAGIC bath is ordered set up and going in no time at all and the plant on full production.

BLACK-MAGIC reduces costs, gets Government acceptance.

Write for portfolio of complete information.

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of solids in plating solutions
by* FILTRATION *with
SPARKLER
HORIZONTAL PLATE FILTERS

Enclosed system filters designed for use with all filter media assure a smooth finish to your plating jobs. Cleaning is more thorough, faster and simpler.

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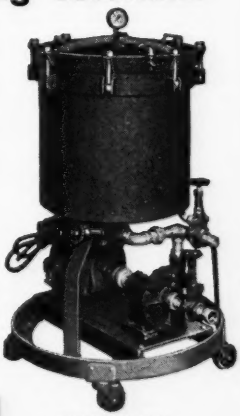
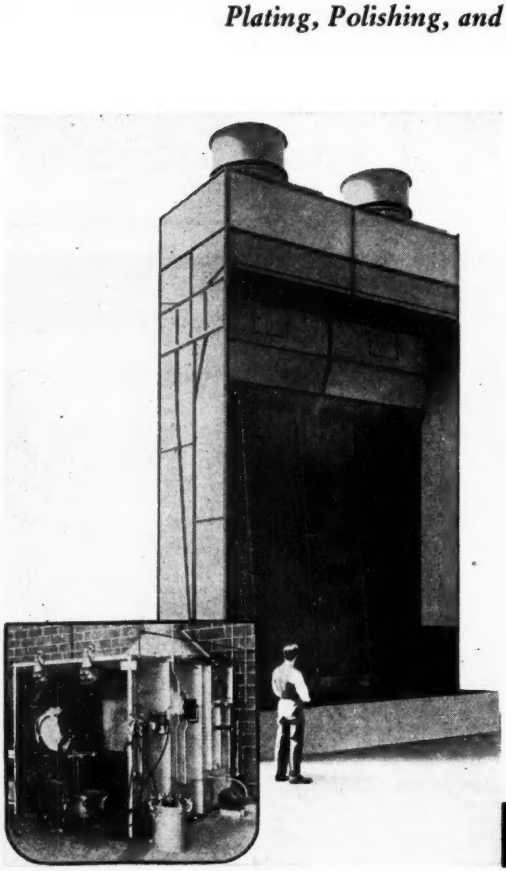


MANY SIZES—
50 to 10,000 G.P.H.

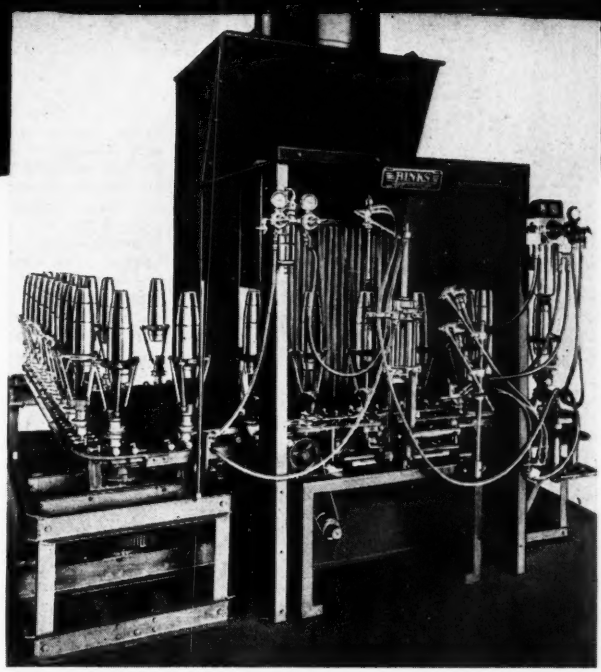
SPARKLER FILTERS
WITH THE HORIZONTAL PLATES

A compact review of many of the interesting and important new products developed in 1942 is presented here, conveniently grouped under the following headings — Cleaning, Plating, Polishing, and Finishing.



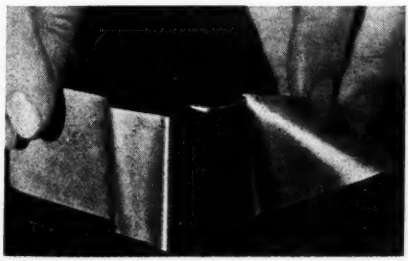
The world's largest water-wash spray booth was designed and built by the DeVilbiss Company, 300 Phillips Ave., Toledo, Ohio, for painting large bomber parts and complete planes in one of the big aircraft plants. It is 152 ft. long, 100 ft. deep, and 31 ft. high. The illustration shows one of the eight compartments compared to the size of an ordinary industrial spray booth. The compartments were assembled in pairs, side by side. The booth can be used as one enormous spray booth with 15,200 sq. ft. of floor space or can be cut into two, three or four booths, each large enough to accommodate a bomber's fuselage less its wing surfaces. The maximum booth space will permit a complete large size bomber to be wheeled in for painting.

(See August, 1942, issue.)



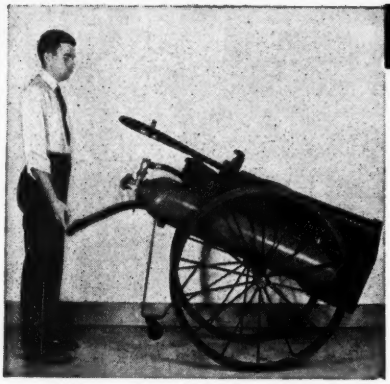
A shell coating machine for automatically spraying the inside and outside of 75 to 105 mm. shells at a rate of from 200 to 500 per hour was built by the Binks Mfg. Co., 3114-40 Carroll Ave., Chicago, Ill. The shells are loaded on a moving conveyor. As they pass in front of the Binks Water Wash Spray Booth, an oscillating mechanism engages the spindle of the work holder, rotating the shells in front of the automatic spray guns which spray the exteriors of the shells. The shells then move, still rotating, to a position where a pneumatic spray gun plunges down into the interior cavity of each shell as it rotates, completely spraying the inside. The shells are then air dried. The Binks Automatic Shell Coating Machine is equipped with an ingenious device known as a "Skip Spray" unit, which is so designed that should a shell be missing on the conveyor, the gun will not spray, thereby wasting no paint.

(See September, 1942, issue.)



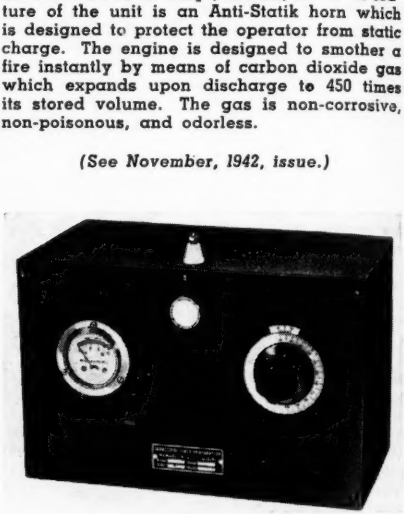
An elastic, rust-preventive paint with a bright, silvery metallic lustre, to be known as Totalume No. 55, was placed on the market by The Wilbur & Williams Company, Park Square Bldg., Boston, Mass. This finish is designed for application on metal products of all kinds and also for the maintenance of production equipment. The accompanying illustration shows a strip of tin plate which has been coated with Totalume No. 55 and then bent at several points without the least cracking or chipping of the paint film.

(See February, 1942, issue.)



Known as the "Alfite," a 100-lb. carbon dioxide engine approved by the Underwriters' and Associated Factory Mutual Laboratories for use in extinguishing both electrical and oil fires was manufactured by the American-LaFrance-Foamite Corp., Elmira, N. Y. A feature of the unit is an Anti-Statik horn which is designed to protect the operator from static charge. The engine is designed to smother a fire instantly by means of carbon dioxide gas which expands upon discharge to 450 times its stored volume. The gas is non-corrosive, non-poisonous, and odorless.

(See November, 1942, issue.)

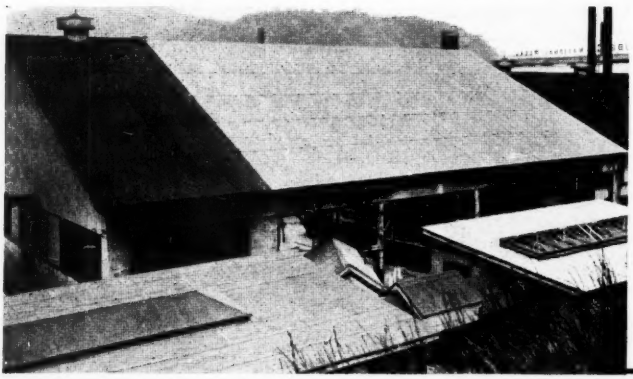


A Robot Raid Warden for use in factories where advance warning of an alert is necessary to prepare for blackout or other emergencies was developed by the Industrial Timer Corporation, 115 Edison Pl., Newark, N. J. The set is designed to control lighting circuits or give an audible alarm during an actual air raid warning. The device is tuned to the carrier signal of key radio stations which are on the air 24 hours each day. In the event of a signal from the Interceptor Command for the station to cease broadcasting, the Robot Raid Warden is automatically set in action.

(See June, 1942, issue.)

An improved method of weatherproofing prefabricated metal and shapes was introduced by the Coated Products Corp., P. O. Box L, Verona, Pa. This process, by the utilization of "Plastipitch," is recommended as a substitute for galvanizing, rolled bituminous applications for weatherproofing, and protecting metals against corrosive atmospheric conditions. Coated Products materials are available in various types of finishes and in a variety of colors, fineness, and quality of mineral surfaces.

(See July, 1942, issue.)

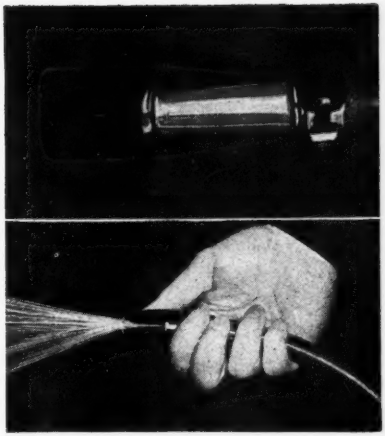


Some fires, such as magnesium incendiary bombs and certain industrial fires, are fought with a spray as well as a solid stream. Consequently, the "Thumb-Spray" nozzle attachment shown herewith was developed by the Pyrene Manufacturing Company, 560 Belmont Ave., Newark, N. J., for converting present extinguisher equipment to wartime needs. It simply clamps over the ⅜-in. hose and nozzle of any standard soda-acid, foam, gas cartridge or pump tank fire extinguisher. The Thumb-Spray is a permanent attachment.

(See October, 1942, issue.)

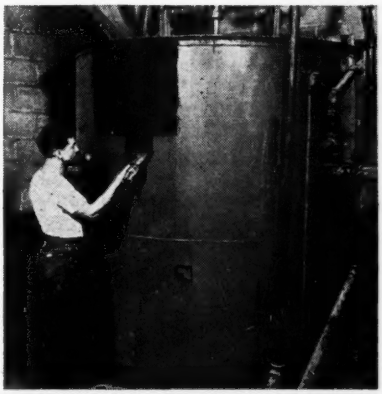
A plastic cork coating which is said to stop dripping from condensation or sweating pipes, walls, ceilings, tanks, and so on, to be known as "NoDrip," was offered to the trade by J. W. Mortell Company, Kankakee, Ill. NoDrip can be applied by either brush or spray gun. It can be spread ¼ in. thick over any metal, concrete, brick, plaster, tile, wood, composition, galvanized, or painted surfaces, corners, angles, or corrugated ceilings. A surface finish of any color can be applied over NoDrip.

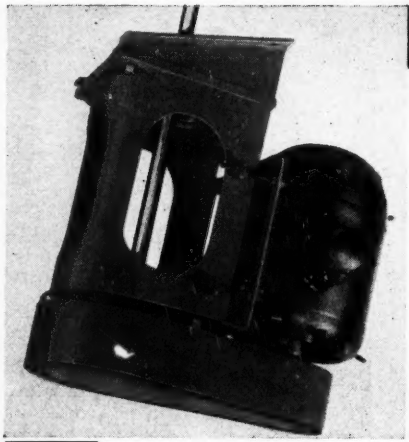
(See April, 1942, issue.)



R. P. Cargille, 118 Liberty St., New York, N. Y., placed on the market the Cargille Buffer Set No. 1 with Hydrion Wide-Range pH Test Paper which can be used to make pH tests for degree of acidity or alkalinity of solutions. The technique is said to be very simple. Readings can be made to one-half pH unit. The Cargille Buffer Set No. 1 is designed for control tests in the plant by unskilled workmen; also for quick preliminary tests in laboratories where more elaborate pH apparatus is available.

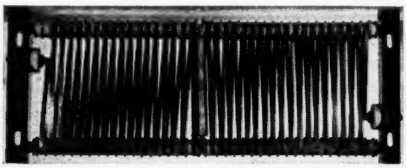
(See June, 1942, issue.)





The announcement of a new vee-belt drive "Lightnin" Top Entering Mixer extended the advantages of this type of drive to top entering mixers for the first time, according to the manufacturer — Mixing Equipment Co., 1038 Garson Ave., Rochester, N. Y. The unit is available for use over open tanks, closed tanks, pressure or vacuum vessels, and for attachment to standard size vessels. One of the special features of the unit is flexibility of drive.

(See February, 1942, issue.)

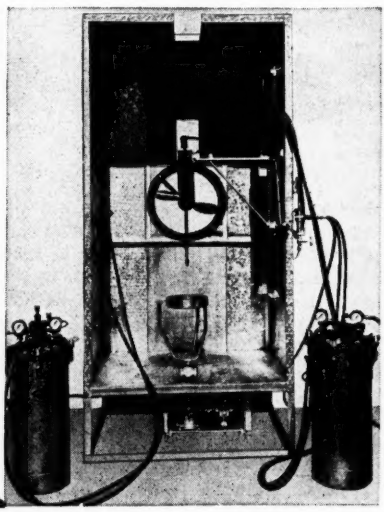


A can adapted for standard paint cans was placed on the market by Binks Manufacturing Company, 3114-40 Carroll Ave., Chicago, Ill. The Binks Adapter fits onto the standard cup attachment for spray guns, and lends itself for use with any standard type paint can. By using the adapter, the original paint can serves as a spray gun cup.

(See August, 1942, issue.)

The Westinghouse Electric & Manufacturing Co., East Pittsburgh, Pa., announced a heater for heating ovens or furnaces to temperatures of 750 to 1150 deg. F. The complete heater is only 2½ in. thick and requires a space 12 x 33 in. for mounting.

(See April, 1942, issue.)

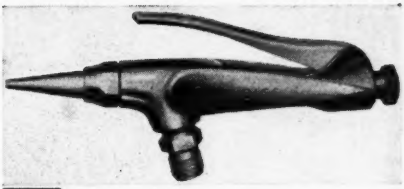


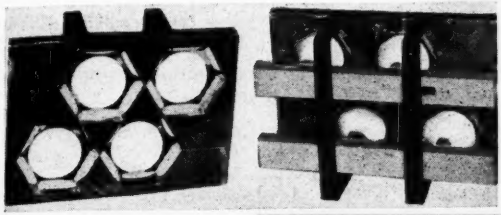
A special unit for spray coating 8-in. shells in a vertical position was built by the Eclipse Air Brush Company, 400 Park Ave., Newark, N. J. The inside coating is done with a semi-automatic spray gun fitted with a long extension nozzle. The outside is sprayed manually by the same operator who handles the inside coating operation. The shell is rotated by an air-motored tripod with a ring at the top to protect the driving band from paint. The rate of production by this method of operation is approximately 25 pieces an hour.

(See November, 1942, issue.)

Designated as the Type SGF, a flow gun designed for caulking, cementing, and other flow operations where plastic materials such as crack fillers, sealing compounds, and heavy paints are used was offered by The DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio. The gun is said to be particularly useful in doping and cementing fabric parts of aircraft and for a wide variety of similar jobs.

(See November, 1942, issue.)



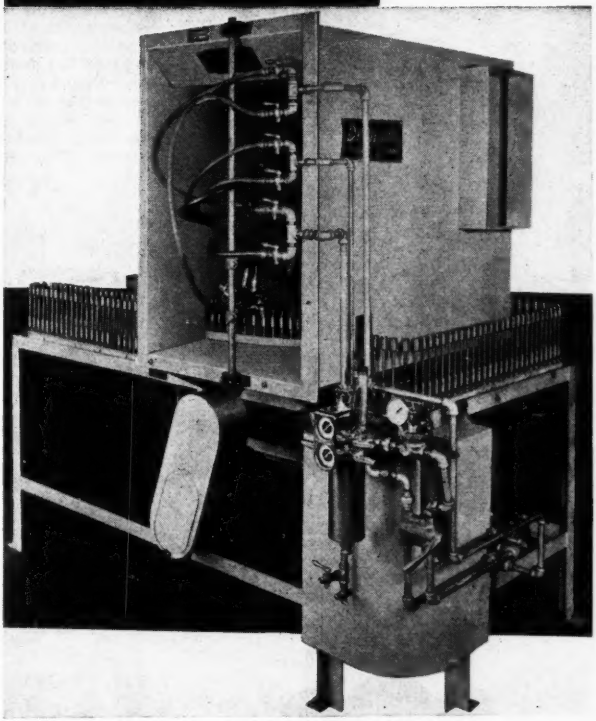


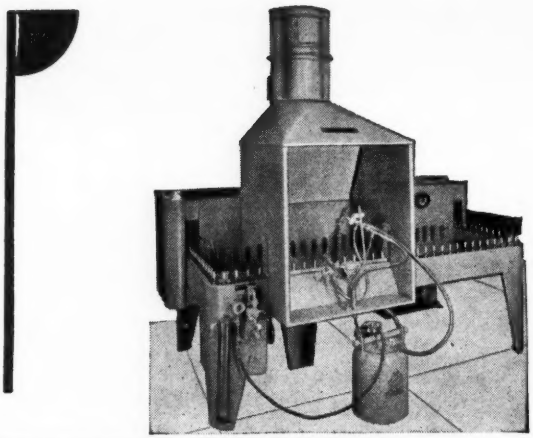
Insulated reflective infra-red panels were marketed by Infra-Red, 1633 E. 40th St., Cleveland, Ohio. The panels are available in 10 standard sizes: 8 in. x 15 in. by lengths varying from 17 in. to 51 in. The 17-in. panels accommodate three lamps and the 51-in. panels, 12 lamps. Available finishes are aluminum, chromium, and gold.

(See March, 1942, issue.)

A machine for automatically painting small shells and shell parts was developed by The DeVilbiss Co., 300 Phillips Ave., Toledo, Ohio. The machine shown in the illustration is designed to coat the exterior of 20 mm. shells at a rate of 2,000 per hour. The machine is built around a "chain-on-edge" variable speed conveyor which is of sufficient length to allow for a 10-minute drying time at a production rate of 1,000 shells per hour or 5-minute drying time at a production rate of 2,000 shells per hour.

(See June, 1942, issue.)

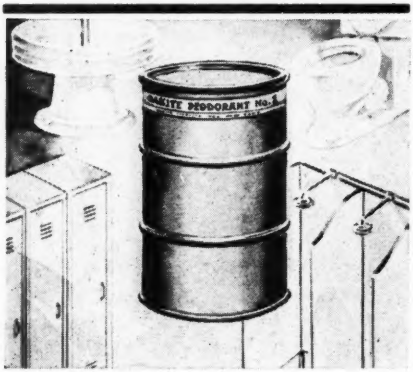




Speeding the flow of ordnance to our armed forces is a new type automatic unit for painting the exteriors of 20 mm. shells. This Paasche Automatic Shell Painting Unit was placed on the market by Paasche Airbrush Company, 1910 Diversey Pkwy., Chicago, Ill. Average production is 1,800 pieces per hour, painted and dried. The unit includes a spray booth with exhaust, electrically heated drying oven, "clamptight cover" material pressure tank, water, oil and dirt separator to provide clean, dry air, and automatic airbrushes with off-and-on control.

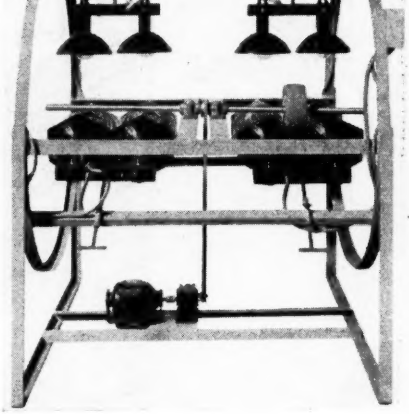
(See March, 1942, issue.)

FINISHING



Because so many iron and steel mills, foundries, and metal working plants are faced with the problem of how to meet the sanitary requirements of enlarged labor forces without installing additional facilities, a new development in the field of modern, effective plant sanitation, known as Oakite Deodorant No. 1, was of interest to those executives responsible for this work. The deodorant was placed on the market by Oakite Products, Inc., 20 Thames St., New York, N. Y.

(See October, 1942, issue.)

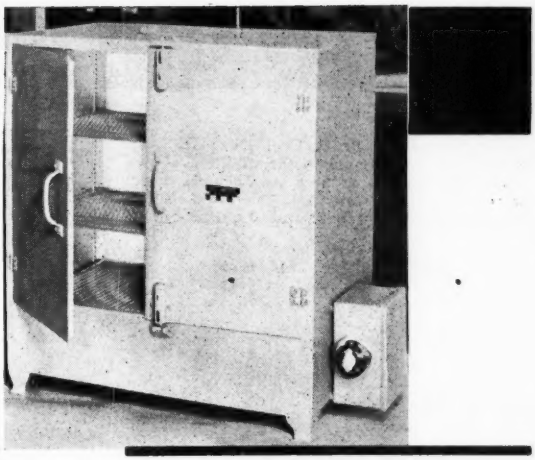


Park Chemical Company, 8074 Military Ave., Detroit, Mich., developed a portable Infra-Red Machine which is said to dry polishing wheels 30 minutes after application of "head." The Park Infra-Red Dryer is equipped with 12 gold-plated reflector lamps, 240 watts, 115 volts each. The wheels pass three lamps in each revolution. The lamps are adjustable to any distance from the wheels.

(See December, 1942, issue.)

A standard line of small Despatch Ovens designed to fill important needs in the aviation industry was placed on the market by Despatch Oven Company, 722 Central Ave., Minneapolis, Minn. The ovens are used for various heating and drying operations up to 400 deg. F. They are available in three standard stock sizes—14 x 14 x 18 in., 14 x 14 x 24 in., and 18 x 24 x 30 inches.

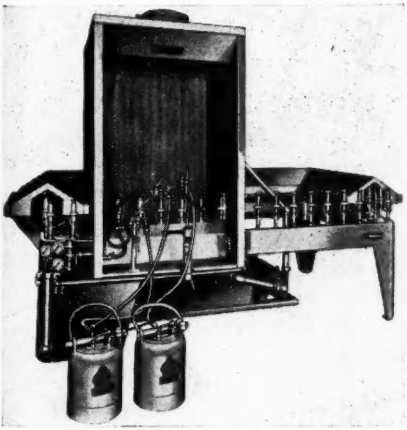
(See April, 1942, issue.)



FINISHING

Known as "Roxaneal," a liquid coating which when applied to glass prevents it from flying during air raids was manufactured by Roxalin Flexible Finishes, Inc., Elizabeth, N. J. The material does not stop glass from fracturing, but will keep broken glass in place, thus preventing dangerous glass splinters from flying. Roxaneal is available in a clear, transparent form which does not obstruct vision or light and also in a blackout type.

(See July, 1942, issue.)

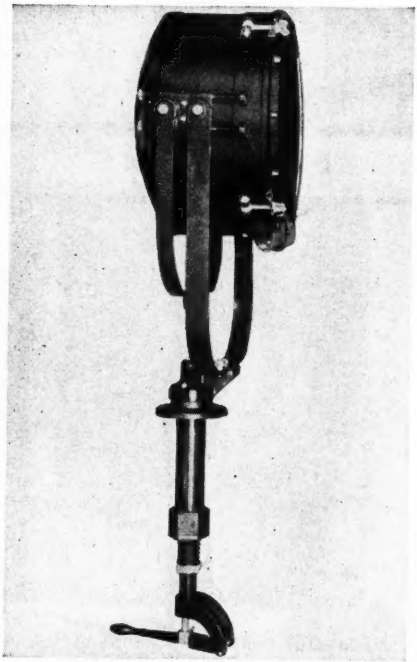


A streamlined airpainting unit for coating interiors and exteriors of 40 mm. shells was introduced by the Paasche Airbrush Company, 1910 Diversey Pkwy., Chicago, Ill. Production on a machine of the type illustrated herewith is 1,920 pieces per hour with 2¼ minutes drying time. However, variable speed drives permit increase or decrease in production or drying time, and conveyors are supplied in sizes to meet any requirement.

(See August, 1942, issue.)

The Eclispe Air Brush Co., 400 Park Ave., Newark, N. J., announced the addition of two V-shaped brackets to hold its Pneumix direct drive air-motored agitators. The brackets are made in two sizes to fit 30 and 50 gallon drums.

(See September, 1942, issue.)

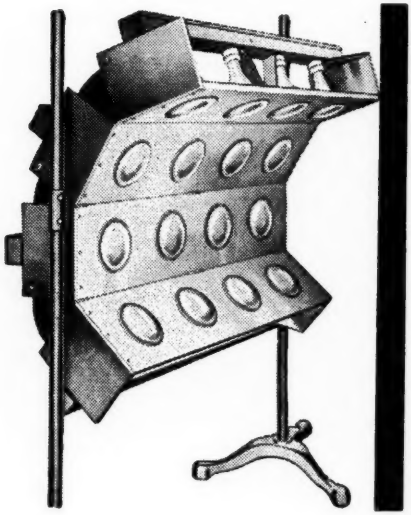


The Wilson Mfg. Corp., 154 W. Erie St., Chicago, Ill., introduced a new Infra-Red drying tunnel. The overall operating efficiency of the tunnel is said to be increased to the maximum through the use of lamp shields, plus complete flexibility of adjustment of each lamp row, making it possible to change the entire tunnel shape within three minutes.

(See September, 1942, issue.)

Designed for use around industrial plants, ordnance plants, aboard ships, and so on, an 18-in. incandescent searchlight with pilot house control or flat base was developed by the Westinghouse Lighting Division, Cleveland, Ohio.

(See September, 1942, issue.)

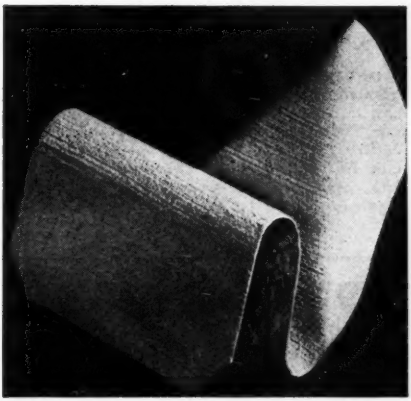


A material to be known as Wet-X-Hale Builders' Plastic which is said to protect and preserve metal surfaces was developed by Rogear Company, 11 Water St., New York, N. Y. According to the manufacturer, fully rusted steel surfaces can be protected without the removal of rust and without using any primer. It can be used on both interior and exterior surfaces and is available in white, pastel and dark shades. The material can be applied by brush, by spray gun, or trowel. It is recommended for use on hangars, tanks, towers, bridges, roofs, and so on. The application of Wet-X-Hale is said to require no special primer.

(See March, 1942, issue.)

Announcement was made by the Acme Electric & Mfg. Co., Cuba, N. Y., of a new model F 100-25 lamp ballast for four 100-watt fluorescent lamps for use on industrial lighting orders or replacements carrying high priority ratings. The ballast is designed to provide equalized and balanced secondary voltage for each lamp. There is said to be no drag, delay, or flashing.

(See December, 1942, issue.)



A holder employing curved line type for use in marking metal ordnance parts having limited areas for such purposes was produced by the Acromark Corp., 9 Morrell St., Elizabeth, N. J. The holder, which is designated as the "Hercules" Curved Line Type Holder, is made from a single piece of shock-resisting alloy tool steel and is furnished with either press shank or shank to fit the hand for striking with a hammer. The holder is available with any desired curvature and capacity.

(See December, 1942, issue.)

A hand-wiping safety solvent to be substituted for naphtha, gasoline, or kerosene, to be known as Gunk XP-92, was developed by the Research and Development Laboratory of The Curran Corp., 6 Pleasant St., Malden, Mass. The material is designed primarily for removing cosmoline from rifles. It is also said to be applicable for wide industrial use as a naphtha substitute for grease-cleaning and hand-wiping operations in ordnance or shell plants. According to the manufacturer, Gunk XP-92 does not de-oil the skin, has no toxic vapors, has no flash or fire point, and leaves an invisible rust preventative film so thin it cannot be detected.

(See November, 1942, issue.)

A colored transparent finish for use on polished metal, which is unaffected by wartime restrictions, was produced by Maas & Waldstein Company, 438 Riverside Ave., Newark, N. J., as a substitute for electroplating and bronze-powder finishes. Platelustre may be applied by spraying or roller coating and it can be obtained for either air drying or baking. Flat stock finished with certain grades can be formed after baking. Two-color finishes can be obtained by "relieving" operations. The colors are said to be fast to light indoor service.

(See May, 1942, issue.)

SPECIFICATIONS!

+

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Adaptation of formulae to the individual requirements of busy war contractors.

Within specification limits there are many possibilities of improvement in speed, workability, and freedom from rejects.

This PLUS factor is worth considering. We'd like to tell you more about it.

The Varnish Products Co.

Cleveland, Ohio

A liquid plastic coating to be known as "Lin-Tite" was placed on the market by Adolphe Hurst & Co., Inc., 330 W. 42nd St., New York, N. Y. Lin-Tite liquid plastic coating is said to be acid and alkali proof. It may be applied in the same manner as paint and following the evaporation of the solvent is said to provide an impermeable, tough, dielectric membrane which adheres firmly to steel surfaces.

(See May, 1942, issue.)

Designed for dipping and drying bomb fuses, the Lanley Oven introduced by The Lanley Company, 750 Prospect Ave., Cleveland, Ohio, has a temperature range of 100 deg. to 300 deg. controlled uniformly by automatic instruments. In operation, bomb fuses are placed in baskets which are hung on the conveyor of the oven. They are carried through a pre-heating zone into a lacquer dipping tank and then through a drying chamber. Each basket holds from 50 to 200 pieces, depending upon the size. The capacity of the oven is 10,000 fuse anvils, bodies and screw plugs per eight-hour period. The Lanley Oven is 3 ft. by 20 ft. by 11 ft. and is gas fired.

(See October, 1942, issue.)

The Sherwin-Williams Co., 101 Prospect Ave., N. W., Cleveland, Ohio, placed on the market a line of camouflage paints. Concealment of strategic military, industrial or other objectives from enemy aerial cameras or aircraft by making them blend with colors of surrounding earth and foliage is possible with this line of camouflage paints. Sherwin-Williams Camouflage Paints are said to dry without gloss or reflections. They adhere to practically any type of surface from glass to asphalt roofing. Paints may be applied by either brush or spray, and have moderate durability under exterior exposure.

(See April, 1942, issue.)

A highly corrosion-resistant, quick-drying coating, known as Carbozite Shop Coat, for the protection of bright steel and similarly highly finished products during oversea shipment or any type of exposed shipment such as in river barges, open trucks and railroad gondolas, was placed on the market by Carboxite Corporation, 906 First National Bank Bldg., Pittsburgh, Pa. The coating is a bituminous base material which dries in from 25 to 30 minutes and is said to resist the attacks of salt air or salt water, moisture, acid, alkali and sulfurous fumes, and is easily applied by brushing, spraying, or dipping. Removal of Carbozite Shop Coat from the product after shipment is easily accomplished by wiping clean with a cloth saturated in any light petroleum solvent.

(See June, 1942, issue.)

The Watson-Standard Company, 255 Galveston St., Pittsburgh, Pa., announced the development of a series of lacquers especially adapted to the conversion from tin or terne plate to black plate. These new lacquers have unusual properties of adhesion to the black plate and prevent under film corrosion, according to the manufacturer. The series includes lacquers developed to withstand processing for home canning. One of the outstanding features of the lacquers is the fact that they can be made in metallic colors, thus solving an important problem of decoration.

(See June, 1942, issue.)

A protective coating which is said to be immune to acids and alkalies of any concentration and at any working temperatures, to be known as "Chempruf," was placed on the market by Protective Coatings, Inc., 10391 Northlawn, Detroit, Mich. Chempruf is said to serve as a successful coating or lining for plating and acid tanks, including ceramics that must be protected against destructive reagents. It can be used as a pipe lining and for other applications where protection of containers or their contents is desired. Chempruf comes in two types, "A" and "B." Type A is a brush-on heavy liquid that can be applied by any workman. Type B is a plastic that hardens to withstand heavy-duty service and is applied only by the firm's own experts in their plant or on location.

(See May, 1942, issue.)

A blackout paint for use in darkening windows and skylights of industrial and commercial properties where it would be impractical to extinguish lights at the sound of an air raid warning was announced by American-Marietta Company, 43 E. Ohio St., Chicago, Ill. The product is to be known as Valdura Black-Out. The paint is marketed in paste form and, when cut 50 per cent with water, can be sprayed or brushed on windows to prevent all passage of light. Coverage is 800 sq. ft. to the gallon. It dries within 40 minutes and is said to provide a flat surface that will not flash back or glare when hit by artificial light used within the room. In interior applications, a single coat may be covered with a white paint where large glass surfaces make the higher reflection properties of a white surface necessary.

(See February, 1942, issue.)

A new anti-rust oil, known as Miccroil, was introduced by the Michigan Chrome and Chemical Company, 6340 E. Jefferson Ave., Detroit, Mich. This material has been developed as a rust preventive which will have many applications and combines the best qualities of the most effective oils of its type. Miccroil was developed so that it might have a number of uses, making possible a reduction in the usual inventories of rust-preventive materials. It may be used on practically any surface which must be guarded from oxidation or corrosion. Aircraft parts, gages, precision tools, other machined or polished parts, stampings, and so on, can be protected with this material. According to the manufacturer, it has been found extremely valuable in plating plant use where a corrosive atmosphere is always prevalent.

(See April, 1942, issue.)

BETTER PLATING, LESS COST!
"MGC" ELECTROPLATING EQUIPMENT
Write for Interesting Details TODAY!
MOTOR GENERATOR CORP., HOBART SQ. BOX PF 13 TROY, OHIO

A finish to be known as Black-Magic Hi-heat for cast iron, malleable iron, brass and copper was placed on the market by The Mitchell-Bradford Chemical Co., Seymour St. off Bruce Ave., Bridgeport, Conn. Black-Magic Hi-heat is applied from a molten bath which is operated at 950 deg. F. An immersion of workpieces from one to ten minutes to produce a rich blue black is recommended. The finish provided by Black-Magic Hi-heat is said to be permanent and also to provide a permanent bond for lacquer, paint, or enamel.

(See March, 1942, issue.)

To provide industries with a substitute for metallic name plates, identification, patent number, instruction tags, and so on, due to the conservation of all types of metal, Avery Adhesive, 451 E. Third St., Los Angeles, Calif., developed a product to be known as "Kum-Kleen" which is said to adhere permanently to any smooth surface of metal, glass, plastic, enamel, wood, and so on. According to the manufacturer, "Kum-Kleen" can be applied without moistening and will adhere even when exposed to high temperatures or changing climatic conditions.

(See July, 1942, issue.)

BOYL-COTE

For Steel Shell Cases

INDUSTRIAL CHEMICAL PRODUCTS CO.

DETROIT

Milwaukee **Fort Wayne**

Hilo Black-Out Paint manufactured by Hilo Varnish Corporation, 42 Stewart Ave., Brooklyn, N. Y., is said to conform to the specifications of the Camouflage Committee of the National Paint & Varnish Association for Type I. This product is said to be waterproof, may be used for inside or outside, and blacks out fluorescent and other lights. It flows out to a smooth, even, dull finish, giving complete black out in one coat and is said to resist heat up to 212 deg. F. Hilo Black-Out Paint hides approximately 500 sq. ft. to the gallon, more or less, according to the smoothness of the glass. It dries to touch in 15 minutes, is hard in two hours, and can be removed with kerosene or other mineral solvents. Hilo Black-Out Paint should be applied in a full, even coat. It may be brushed or sprayed as it comes in the can.

(See March, 1942, issue.)

A synthetic enamel to be known as Lustreless Coronado Tan was placed on the market by Roxalin Flexible Lacquer Co., Inc., Box 7121, Elizabeth, N. J. This enamel is designed for use on motorized equipment such as combat vehicles, motor transport trucks, tanks, pontoons, and so on. The finish is designed to reduce visibility of these Army vehicles and equipment by eliminating almost all reflection from the finished surface. The Coronado Tan color is designed to blend in with desert terrain. Spraying is the normal method of application in commercial establishments and the material will spray satisfactorily when thinned by 15 per cent by volume of thinner Quartermaster Spec. No. ES-370B. Roxalin Lustreless Coronado Tan will brush satisfactorily when used unthinned in the original package consistency or when thinned no more than five per cent by volume with thinner—Quartermaster Spec. ES-370B. The material flows sufficiently so that a brushed surface is normally free from streaking, sags, or runs, and with a minimum of brush marks.

(See February, 1942, issue.)

ANODES AND SALTS

for every type of plating

THE HARSHAW CHEMICAL CO.

Cleveland, Ohio, and Principal Cities

HARSHAW

Due to the shortage of China Wood Oil and curtailment of varnishes and enamels, New Wrinkle, Inc., 314 W. First St., Dayton, Ohio, developed a substitute hard drying, wrinkling material to be known as Wrinklin 68. This material is said to be formulated from domestic oils and is offered to the manufacturing licensees by New Wrinkle, Inc., for their use in the production of Wrinkle finishes. Wrinklin 68 is said to serve two wartime purposes: It releases thousands of gallons of China Wood Oil to other uses, and it alleviates a threatened reduction in the allotment of China Wood Oil set aside for the production of Wrinkle finishes.

(See June, 1942, issue.)

"A" Lustral Enamel was reinstated by The Sherwin-Williams Company, 101 Prospect Ave., N. W., Cleveland, Ohio, to fill the gap left by restrictions on Kem Lustral which is now obtainable only on priority. "A" Lustral is suitable for either indoor or outdoor use, and brush, spray, or dip application. It is being offered in the same range of colors as Kem Lustral at slightly lower cost. At the same time a new color card was announced for "B" Lustral Enamel which is somewhat more economical than "A" Lustral, but is recommended primarily for interior use. Unless further restrictions are placed upon the paint industry, both "A" and "B" Lustral Enamel can be supplied on non-priority orders.

(See June, 1942, issue.)

An olive drab malleable iron finish to be used as a substitute for cadmium finish on malleable iron, to be known as Harris No. 5155, was placed on the market by The J. E. Harris Company, Wooster, Ohio. The material is said to dry in 10 minutes and to provide a hard surface in one hour. It may be applied by dipping and only one coating is required. Harris No. 5155 Olive Drab Malleable Iron Finish has been approved for use on O.C.D. and Army fire hose couplings, nozzles, spanner wrenches, and so on.

(See October, 1942, issue.)

A chemical method for producing a protective coating on aluminum and aluminum alloys, to be known as "Bondizing," was introduced by Colonial Alloys Company, E. Somerset, Trenton Ave. and Martha Sts., Philadelphia, Pa. The work to be treated is first degreased and pickled and then immersed into the Bondizing solution for a period of one-half minute to five minutes.

(See May, 1942, issue.)

How Metso Cleaners prevent waste

Protect Soft Metals

Metso Cleaners are used successfully for soft metals such as zinc, tin, aluminum because they exert protective action, which prevents dissolving of the metal. This is due to the unique soluble silica content, which in addition to restraining corrosiveness, contributes these important advantages:

1. Effectively buffers to sustain cleaning power.

2. Prevents dirt from redepositing on clean work.

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9 Plants Distributors in over 65 Cities

ECONOMICAL BASIC SOLUBLE SILICATES

A corrosion-proofing liquid which is said to protect metal parts and resist abrasion was placed on the market by American Oil & Supply Co., 238 Wilson Ave., Newark, N. J. The material is to be known as Amovis Par-Al-Ketone. It can be applied by dip, spray, or brush and dries to form a thin brown coating on metal parts to protect them from corrosion. According to the manufacturer, the coating resists abrasion, is self-healing should the surface be broken, remains ductile from minus 20 to 180 deg. F., and does not pick up dirt. It is resistant to action of water, vapor, and actinic rays. Removal is by use of a hydrocarbon solvent. The material can be left on bearing surfaces, as it does not interfere with lubrication. Typical applications are on aircraft for export, ordnance, machinery, structural steel, tanks, and tools.

(See October, 1942, issue.)

Designated as Valdura Singlekote, a paint product which primes, seals, and finishes interior surfaces in one application was announced by the American-Marietta Co., 43 E. Ohio St., Chicago, Ill. The material is designed for use on plaster, concrete, brick, wood, and metal. Coverage is up to 750 sq. ft. per gallon. Valdura Singlekote is said to combine the hiding power and economy of water-type paints with the washability, durability, and performance of oil-type coatings. The material may be applied to surfaces previously coated with calcimine or casein paints, providing the old covering is bonded or tight to the wall. While it easily covers dirt, Valdura Singlekote is not recommended for use on oily or greasy surfaces. High hiding power is said to permit coverage of dark surfaces with a single coat. The material, which is self-leveling, is said to set in two hours, dry within 12 hours, and provide a dead-flat finish when viewed at a 90-deg. angle.

(See August, 1942, issue.)

Six new lacquers were announced by Watson-Standard Co., 235 Galveston St., Pittsburgh, Pa., for use on black-plate steel food containers to conserve priority tin and terne plate. The materials are gold color, applied by roller coating to a thickness of about 9 mm. Pfund gage. Most of them are baked at 360 to 375 deg. F. for 17 minutes. No. V-1823 material is a sanitary, odorless and tasteless lacquer for the interior of food cans closures. No. V-1850 is an interior material for crowns. It resists action of alkalies used in pasteurizing crowns, has good fabrication and processing ability. No. V-1850-A withstands fabricating, resists sterilizing and weak acids. No. V-1850-B is a material with protective and decorative properties. No. V-1850-C resists processing at 250 deg. F. for one hour and is a general-purpose sanitary material. No. V-1850-D is a decorative material that produces a clear gold finish. It can be specified with "slip" qualities as a finish coat or without "slip" to use as a base coat for lithography.

(See September, 1942, issue.)

CUT DOWN REJECTS WITH ORVUS IN YOUR METAL CLEANING BATHS

This sulfated fatty alcohol Cleansing Agent is EFFECTIVE
—as a surface tension lowering agent
—as an emulsifier
—in dispersing lime soaps which might cause poor plating results if permitted to deposit on the metal

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AND SAVE YOU MONEY

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Solvents recovered by the Lofgren Process.
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HAMMOND CHEMICAL SERVICE, Inc.
241 Brunswick St. Hammond, Ind.

"Ilg Fights Its Second War" headlines a colorful new brochure now being distributed by the Ilg Electric Ventilating Co., 2850 N. Crawford Ave., Chicago, Ill. In 42 duotone photographs, the company pictures the use of Ilg Self-Cooled Motor Propeller Fans, Universal Blowers and Unit Heaters in both World War I and World War II . . . comprising a comprehensive bird's-eye-view of the nation's war efforts in 1917-18 and 1941-1942.

From "blackout" ventilation systems for war-crowded factories to portable fume exhausters for welders in shipyards . . . from cooling communication apparatus on big bombers to heating and ventilating barracks and mess halls . . . from small blowers for the Signal Corps to huge marine-type apparatus for the Navy . . . and all the way in between . . . the wartime news of Ilg equipment is pictured in beautiful color illustrations.

An important factor in naval and maritime construction, Ilg equipment has been included on over 2,000 ships in the past two years . . . destroyers, PT boats, minesweepers, aircraft carriers, cargo ships, tankers, troop ships, and many special craft of secret design.

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THE HAMILTON EMERY & CORUNDUM CO.

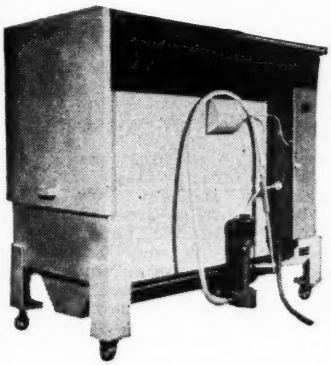
Chester, Massachusetts

On METAL PARTS and *Shells* AVOID "DUDS"

CUT CLEANING COSTS

Speed out-put with a

PHILLIPS AUTOMATIC DEGREASER



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- HANDLING LABOR
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- PARTS DAMAGE

The Phillips Degreaser can replace soaking vats, rinse vats, drying ovens and eliminate parts handling between each. It is self-contained, electrically heated and controlled, requires no steam, water, gas or plumbing connections. WRITE FOR CATALOG.

PHILLIPS MANUFACTURING CO.

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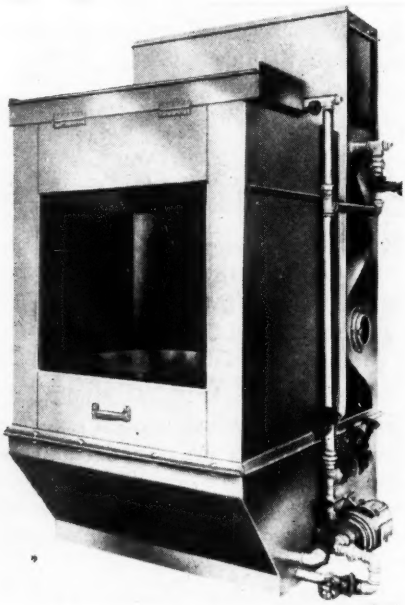
New PLANT AND EQUIPMENT AND Materials

"Aqua-Restor" Paint Spray Booth

A new paint spray booth known as "Aqua-Restor" and now being marketed by Aqua-Restor Division, Mayer Manufacturing Corp., 45 Division Place, Brooklyn, N. Y., is said to provide a number of features which insure efficiency in spraying operations of various sizes and types. Illustration shows single compartment Aqua-Restor Paint Spray Booth featuring rear and side water-impingement walls. "Super-turbulent" water-washed walls, through continuous and effectively pressured flow, are said to provide employee health protection and reduce fire hazards to a minimum.



"Aqua-Restor" Paint Spray Booth

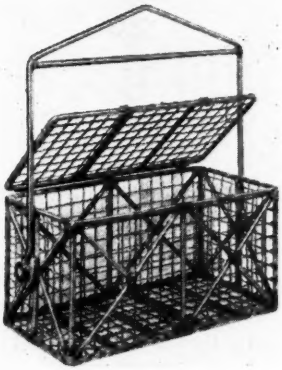
Aqua-Restor units are said to require little servicing, due to complete elimination of moving parts. Used water may be drained directly or pumping can be arranged for distant disposal. According to the manufacturer, Aqua-Restor Paint Spray Booths are now being successfully used in many war production plants and many users claim high percentage of pigment reclamation. The unit illustrated is equipped with turntable and fluorescent lighting and is available in single or multiple compartments. Other sizes and designs, using Aqua-Restor water-wash principle, may be engineered to meet specific industrial requirements.

Rolock Pickling Basket

A trunnion-type pickling basket, designed to minimize "drag-out" acid losses, designed and built by Rolock, Incorporated, Fairfield, Conn. This specialized processing carrier handles 400 to 800 lb. loads of 40 mm. shell cups through a 10 per cent sulphuric acid solution for removal of annealing scale.

The basket is constructed so that after the bath it may be suspended over the tank and rocked or revolved by hand to drain all cups of entrapped

liquids, regardless of their positions. The entire top of the basket is hinged to speed up loading operations. In this



Rolock Pickling Basket

case, shell cups are loaded quickly by shovel. Both frame and mesh are of Monel metal, arc-welding construction being used throughout.

American Drum-Loading Truck

The American Pulley Company, 4200 Wissahickon Ave., Philadelphia, Pa., has added a new drum-loading truck to its line of pressed steel hand trucks. The new addition, to be known as the Upsy Truck, is a standout for safe, easy and quick handling of drums, barrels, and kegs—any container having a chime or bead. Handling up to a thousand pounds, the Upsy Truck makes barrel or drum moving a one-man job, and loads a drum without the need of first moving it away from adjacent drums.

A sliding hook on the truck's center rail catches the top bead or chime of drum or barrel. Trucker pulls down on handles, tilting drum towards him. This allows nose prongs to slide under bottom bead of drum or barrel. Then, as truck handles are lowered to trucking

American Drum-Loading Truck

position, the nose prong lifts the drum or barrel off the floor and the trucker

McKeon's

"Liquid Sulphur"

REMOVES COPPER PLATING

SAMPLE FREE

Sulphur Products Co., Greensburg, Pa.

For a real good polishing job use

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TURKISH — NAXOS — AMERICAN

KEYSTONE EMERY MILLS *Write for Sample* 4316 Paul St., Phila., Pa.

is ready to "roll." Range of the adjustable hook is from 16 in. to 40 in.—even a small keg can be accommodated.

L & R Heavy Duty Cleaning Machine

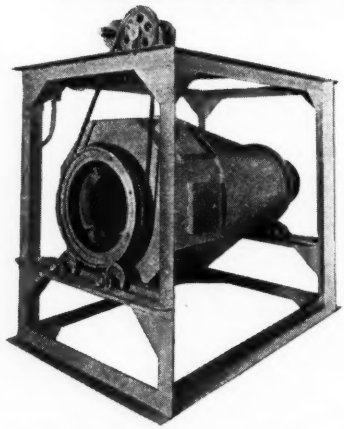
The illustration shows the L & R Heavy Duty Precision Cleaning Machine, manufactured by L & R Manufacturing Co., 54 Clinton St., Newark, N. J., a portable unit weighing less than 50 pounds. The work basket when loaded weighs only a few pounds, making speedy production possible without taxing the endurance of the female operator. The manufacturers provide instructions which they claim are easy to follow, and that the results are uniformly excellent. The principle of operation is said to eliminate costly damage to parts. The machines can be operated by either men or women.

L & R Cleaning Machine Operated by Woman

The manufacturers claim that L & R Machines are now being used extensively by many War Industries for the cleaning of instruments, meters, gages, bearings, motor assemblies, jewels, jeweled bearings, clocks, watches, gears, extruded elements, and an infinite variety of other related small precision parts.

HOWARD ENGINEERING

EQUIPMENT



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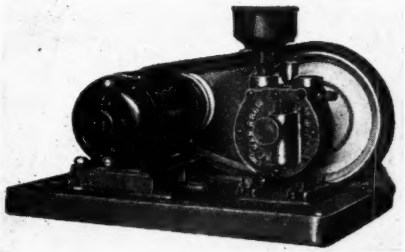
To operate the machine, the work basket is loaded with parts, then is snapped on to the motor shaft of the machine lowered into the first jar containing L & R Power Nofome Cleaning Solution to cut grease, grime, oil, and so forth. The basket is agitated centrifugally, rheostat controlled and speed may be stepped up to 1,000 r.p.m. A feature of the L & R Heavy Duty Cleaning Machine is the controlled reversing action. By pressing the red button just above the rheostat knob, the action of the basket may be switched from clockwise to counterclockwise motion.

After running in the cleaning solution, the basket is lifted above the level in the jar and revolved to throw off excess fluid. This, it is claimed, keeps the rinse in the second jar cleaner and prolongs its effectiveness. The Nofome is soluble in the rinse which also thoroughly cleanses the parts. The operational procedure is the same as in the first jar. The third jar contains the same rinse as the second container and acts as a final degreaser and polishing agent. Drying is accomplished in the fourth chamber which is equipped with a Chromalox heater unit through which a motor driven blower sends hot blasts of air into the parts revolving in the basket.

Leiman Automatic Vacuum Unit

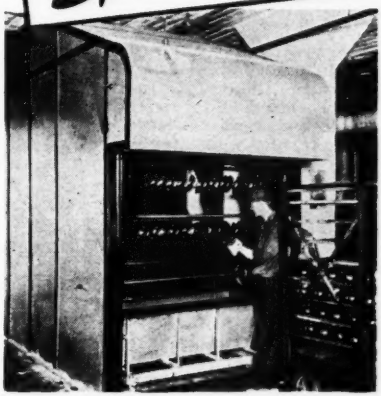
An automatic vacuum unit designed for use with steam heating systems has been placed on the market by Leiman Bros. Inc., IB-138 Christie St., Newark, N. J. By means of the Leiman Auto-



Leiman Automatic Vacuum Unit

matic Vacuum Unit, a more even distribution of heat is said to be obtained, thus increasing the effectiveness of pres-

Faster FINISH BAKING Speeds WAR SUPPLIES



DESPATCH Continuous Type Ovens Set New Records

With construction features geared to round-the-clock operation. Despatch ovens are setting new records in several large plants—for greater output of high quality finish-baking.

Your plant can likewise profit immediately from the faster baking provided by these units.

- **BAKES FASTER** using larger heater-fan-duct combination. Saves fuel.
- **EASY HANDLING** with continuous or batch-type loading systems, horizontal or vertical. Saves labor.

TRY THIS SERVICE! *Wire or phone today for a Despatch engineer; let him recommend the RIGHT equipment for your special needs. Ask for Bulletin 51-K.*

DESPATCH OVEN COMPANY

ent heating arrangements. This unit is said to insure freedom from cold air in steam systems at all times so that heat will enter all radiators evenly and without hindrance.

The Leiman Automatic Vacuum Unit is made in a number of sizes for different sizes of heating systems, the smallest being applicable for a system up to about 4,500 sq. ft. of radiation. It consists of a motor-driven pump automatically controlled with a relief valve, air gage and automatic lubricator, ready to attach to the steam system which also must be equipped with automatic float type water trap with water return line to the boiler. This system is said to have shown highly efficient and consistent results.

Rectifiers Bulletin. Bulletin ER-103, covering rectifiers for electroplating, anodizing, and electroplating, is now being issued by Hanson-Van Winkle-Munning Co., Matawan, N. J. The bulletin describes in full detail the HVWM copper oxide recitifiers, their construction, operation and operating characteristics, and also gives answers to a number of questions which sooner or later confront every plating executive in actual practice.

These rectifiers are made in units ranging from 300 amp. to 2000 amp. at 6 v., and from 150 amp. to 1000 amp. at 12 v. Special rectifiers of larger sizes are also produced. The bulletin is profusely illustrated with photographs, charts, and diagrams which slow clearly the principles and construction of this type of low-voltage current producing equipment.

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Micromax Thermocouple Pyrometer Catalog. A 56-page, well-illustrated catalog describing pyrometers for war industry use is now being issued by Leeds & Northrup Company, 4934 Stenton Ave., Philadelphia, Pa. This catalog attempts to cut correspondence and to give wartime pyrometer users first-hand information about available instruments—indicators, recorders, and controllers—and about the thermocouples and accessories which are used with them.

New or prospective users of balance-type (potentiometer) pyrometers will be particularly interested in the concise but comprehensive description this book contains of how the basically sound balance method is applied to the measurement and control of thermocouple temperatures.

Correction

Through an error, the illustration used in an announcement of the Phillips Fully-Automatic Portable Still on page 83 of the December, 1942, issue of PRODUCTS FINISHING, was incorrect. The still is a product of Phillips Manufacturing Company, 3475 W. Touhy Ave., Northtown Station, Chicago, Illinois.

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3. Sturdy-Bilt "Simplex" Metal Parts Cleaner

The Sturdy-Bilt Equipment Corp., Dept. P-11, West Allis, Wis., is now issuing a folder describing the features of Sturdy-Bilt "Simplex" metal parts cleaning equipment.

4. Johnson Wax-Fortified Paints

A 12-page catalog now being issued by S. C. Johnson & Son, Inc., 1012 Sixteenth St., Racine, Wis., explains the purpose of War-Fortified Paints, what makes them economical, and where they are used.

5. Speed Production

A booklet containing information about a new technique of grinding, finishing, and polishing that offers increased production to finishing departments is now being issued by Minnesota Mining & Mfg. Co., Forest and Fanquier Sts., St. Paul, Minnesota.

6. Metal Cleaning Equipment

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